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POLICY.

Unless otherwise indicated, the views expressed in the original articles in this magazine are those of the individual authors and not necessarily precisely those of the Department of the Army or the U. S. Army Command and General Staff College.

Editor.

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MILITARY REVIEW

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CONTENTS

THE TWO SIDES OF THE SINAI CAMPAIGN

Bernard B. Fall

THE return to Israeli territory on 8 March 1957 of the last rear guard of Israeli armor from the Gaza Strip ended one of the most amazing military operations of the past decade. Operation *Kadesh* —named for the Biblical city of Kadesh-Barnea buried in the sands of the Sinai Peninsula—began at dusk on 29 October 1956 and ended on 5 November 1956 at 0930 with the total occupation of the Sinai by Israeli forces.

This campaign already has entered the annals of history with the convenient if not entirely accurate name of the "100-Hour War." Books and articles, some by eminent writers in the field, have described the blitzkrieg character of the war and have dwelt in great detail upon the remarkable tactical ability of the young Israeli Army and the equally noteworthy lack of similar qualities on the other side. The accounts, as presented thus far, perhaps may leave the reader with the impression that the operation, on the whole, was a "pushover," with tank columns driving at top speed into blindly fleeing hordes of disorganized infantrymen.

This view of the Sinai Campaign of 1956 would be equally unjust to the Israelis who fought hard and paid dearly for their victories, and to the Egyptians, some of whose units gave a good account of themselves, although surrounded and outnumbered. Without entering into the tangled politics of the situation it is proposed to describe briefly the troops, plans, and operations used by both sides.

The author wishes to acknowledge his gratitude to Colonels Ahmed Sabry Kamal (Egyptian Armored Forces) and Alexander Zielony (Israeli Air Force) for providing some of the background material used in this study.

The Terrain

Colonel Robert Henriques (British Army, Retired), who traveled in the Sinai a few days after the Israeli attack, described it as "24,000 square miles of absolutely nothing." There is nothing which, upon closer examination, would tend to infirm this judgment. The size of West Virginia, the Sinai Peninsula forms a triangle with a northern base of about 170 miles and a depth of 320, resting on its southernmost tip jutting out into the Red Sea. Its boundaries are well defined on all sides but one: in the north, the Mediterranean; to the west, the Suez Canal and the Gulf of Suez; and to the southeast, the Gulf of Aqaba. Only the northeastern side of the triangle, also about 170 miles long, is nothing but a surveyor's line in the desert sand (Figure 1).

In the northernmost corner of the peninsula, a small finger of land, about four times the size of Manhattan, juts like a thorn deeply into Israel's flank: the Gaza Strip, a chunk of Palestinian territory that remained in Egyptian hands after the 1948-49 war for Israel's independence. The Sinai is roughly divided into three horizontal bands: the desert lowlands in the north, about 70 miles wide; then a high, 100-mile-wide plateau criss-crossed by many *wadis* (gullies which may fill with water during the brief fall rainy season) and fairly accessible to sturdy motor vehicles; and the nearly roadless and waterless Sinai Mountains which fill

Imaginative leadership, better communications, logistical flexibility, and—in the later stages of battle—air cover were the dominant factors contributing to the Israeli military success in the Sinai Campaign

the southern part of the peninsula. They reach an altitude of 8,000 feet and constitute perhaps the most inhospitable spot of the entire Middle East.

The area is populated by 40,000 Arabs and Bedouins living in the small towns along the Mediterranean, the Gulf of Suez, and the oases of the plateau. They eke a meager living from coastal fishing, some trading, and a modest amount of agriculture where water is available. The Gaza Strip is fairly densely populated, thanks to 220,000 Arab refugees from neighboring Israeli territory who fled to Gaza in 1948 and are now under the care of a United Nations relief agency.

The sand dunes in the northern zone prohibit extensive roadbuilding. Hence the coastal road from Gaza to El Arish and El Qantara on the Suez Canal is of minor importance. The major road is the so-called "Turkish Road" connecting Ismailia with Beersheba and Tel Aviv; it played an important role in German-Turkish operations against the canal during World War I. A less well-developed road follows the ancient caravan tracks of the Moslem pilgrims from Port Suez at the southern end of the canal to Aqaba and thence to Mecca. In recent years a strategic road has been built along the southwestern shore of the peninsula to the fortified positions of Sherm el Sheikh and Ras Nuzrani, controlling the Tiran Straits at the entrance to the Gulf of Aqaba.

Doctor Bernard B. Fall has written several articles on Indochina for the MILITARY REVIEW, *the latest of which was "Indochina—The Last Year of the War. The Navarre Plan" (Dec 1956). A French citizen, he came to the United States as a Fulbright scholar in 1951 and received his Master of Arts and Ph.D. degrees from Syracuse University. He has traveled in the Middle East and spent 1953 in Indochina where he accompanied French units in combat operations throughout the country. Doctor Fall teaches politics at Howard University and is now in Indochina at the invitation of the Vietnamese National Government where he is engaged in research work.*

There is only one railroad, started during the Sinai Campaign of 1917 and now extending to the end of the Gaza Strip where it connects with the Israeli rail network. There are no port installations of any significance in the Sinai. However, in recent years the Egyptian Army has built two modern airfields (Bir al-Hamma and Bir Gifgafa) capable of accommodating jet fighters. Several other fields will accommodate *C-47's*.

This, then, was the uninviting locale in which the Israelis and Egyptians were to fight the brief but violent clashes of October and November 1956.

Planning and Operational Aims

The political and social factors which led to the war are beyond the scope of this article. In military terms it can be said that the Arab States have considered themselves in an approximate state of war with Israel ever since the latter's emergence as a state and probably hope for its eventual elimination. Israel has a population of about 1.8 million; its surrounding Arab neighbors have a total of more than 45 million. Considering Israel's long boundaries—in most cases nothing more than a cease-fire line now "frozen" for eight years—it could hardly sustain a defensive operation against a combination of its neighbors. In the words of its prime minister, the Honorable David Ben-Gurion:

> *A glance at the map of Israel is enough to show clearly the appalling danger that faced us. . . . A sudden attack by these three countries [Syria, Jordan, and Egypt] under Egyptian command could easily have cut the country in two at the narrow strip in the neighborhood of Natanya.*
>
> *Our airfields and two coastal towns, Jaffa-Tel Aviv and Haifa . . . could have been bombed, thus preventing mobilization of reserves which is the solid foundation of our security in view of the smallness of our Regular Army.*

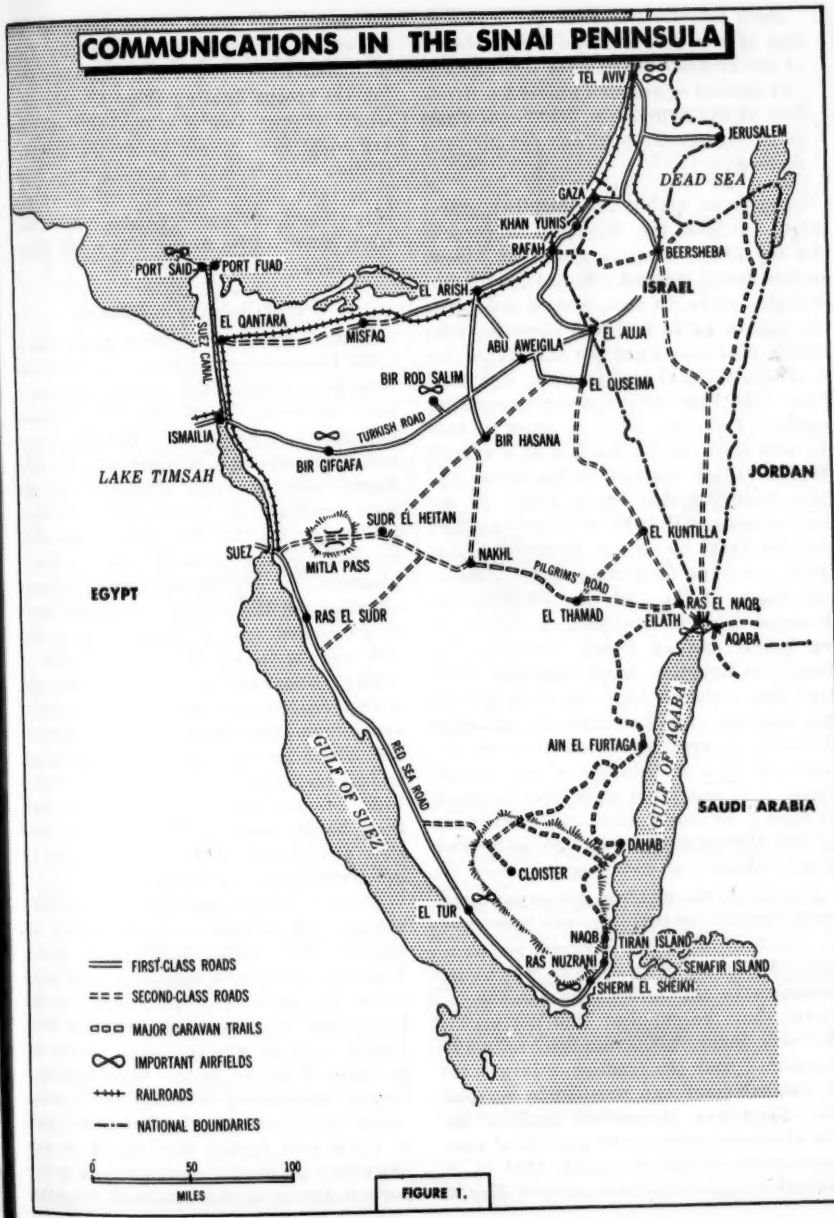

COMMUNICATIONS IN THE SINAI PENINSULA
TEL AVIV
JERUSALEM
DEAD SEA
GAZA
KHAN YUNIS
RAFAH
BEERSHEBA
ISRAEL
PORT SAID
PORT FUAD
EL ARISH
SUEZ CANAL
EL QANTARA
MISFAQ
ABU AWEIGILA
EL AUJA
BIR ROD SALIM
EL QUSEIMA
ISMAILIA
TURKISH ROAD
BIR HASANA
BIR GIFGAFA
LAKE TIMSAH
JORDAN
SUDR EL HEITAN
EL KUNTILLA
SUEZ
MITLA PASS
NAKHL
PILGRIMS' ROAD
EGYPT
RAS EL SUDR
EL THAMAD
RAS EL NAQB
EILATH
AQABA
GULF OF SUEZ
RED SEA ROAD
AIN EL FURTAGA
GULF OF AQABA
SAUDI ARABIA
DAHAB
CLOISTER
EL TUR
NAQB
TIRAN ISLAND
RAS NUZRANI
SENAFIR ISLAND
SHERM EL SHEIKH
FIRST-CLASS ROADS
SECOND-CLASS ROADS
MAJOR CARAVAN TRAILS
IMPORTANT AIRFIELDS
RAILROADS
NATIONAL BOUNDARIES
0 50 100
MILES

FIGURE 1.

Such interference with the mobilization of our reserves and bombardment of our airfields would have left us helpless against aggression unless we struck first at the aggressors. The Sinai Campaign became the condition for our very survival.

In spite of highly inflammatory statements by both the Egyptian leadership and the press, it appears that an attack against Israel was not planned for the immediate future. In fact, several independent sources agree with the Egyptian contention that ever since the nationalization of the Suez Canal in July 1956, Egyptian forces had been withdrawn in increasing numbers from the Sinai in order to face the now more likely situation of a violent British-French reaction to the canal seizure. Realizing that Egypt could not simultaneously withstand an attack against the Nile Delta by British-French invasion forces, perhaps supplemented by a flanking attack of the 10th United Kingdom Armored Division stationed in neighboring Libya, and an Israeli strike in the Sinai, the Egyptian Army command withdrew two divisions from the Sinai during the summer. Another, the 2d Infantry Division, apparently was on the move toward the Nile at the time of the Israeli attack. The remaining units were designed to fight a holding action until such time as the full intent of the adversary had become clear.

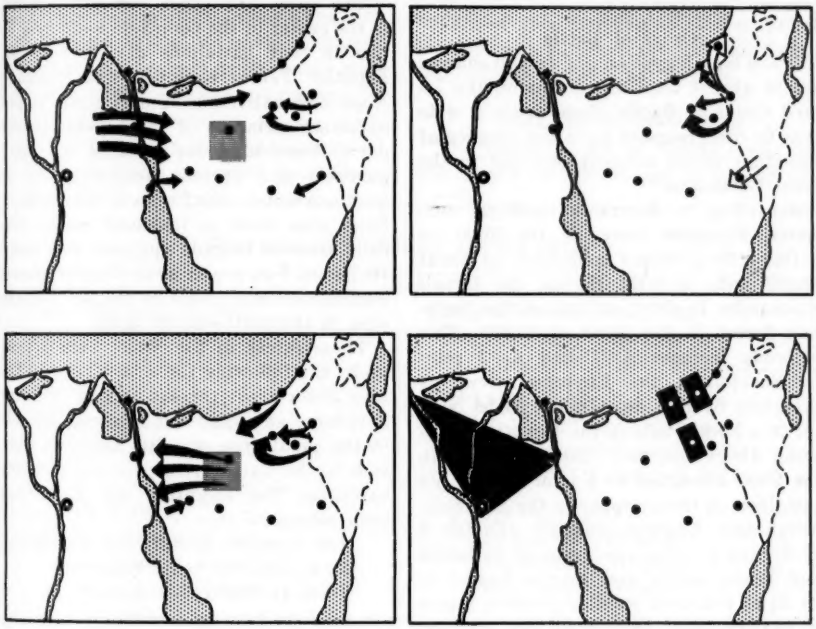
The size of the matériel dumps captured by the Israelis in the Sinai has been cited as proof of Egyptian aggressive intentions. However, even sources which are favorable to the Israelis have since reported that the supplies "did not exceed the needs of the 80,000-man force normally garrisoned near the frontier, a large part of which Nasser had recalled to Egypt." The Egyptians themselves explain the size of those stores by the paucity of communications *across* the canal; that is, in case of an all-out attack against Egypt, an enemy air force could interdict the movement of supplies successfully from mainland Egypt into the Sinai, thus forcing the troops fighting there to rely upon whatever was available on the spot. The argument is certainly of value; however, it does not explain too well why fairly important stores were located so vulnerably close to the Israeli border, unless they were meant to be used by jumpoff forces in a forward movement.

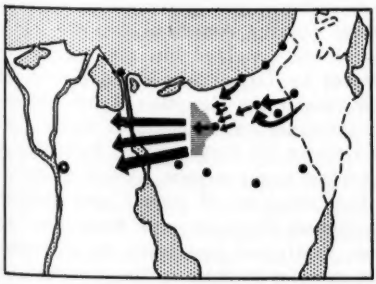
Best Defense Is Offense

Thus Egyptian intentions in the fall of 1956, for all their hostility toward Israel, were not designed for immediate aggression. However, politically the situation had come to a head. On 22 October Jordan and Syria signed a military alliance with Egypt, placing their troops under the high command of Major General Abdul Hakim Amer, the Egyptian commander in chief. In the view of Israeli military planners this action created a dangerous situation. In the case of a sudden attack they could no longer guarantee even partial completion of their mobilization. A country whose major production and population centers are eight jet-flight minutes away from the nearest enemy airbases and whose narrow waist between the potential enemy and the sea is only 10 miles wide has no "second position." In fact, there hardly seems to be a militarily sensible alternative to the course chosen by the Israelis—all-out attack.

There is no pat answer to the question whether the Israelis coordinated their operation with British and French moves. There are weighty opinions on both sides of the argument, but the indications are that Israel in all probability would have fought anyway and no doubt would do so again if placed in the same situation. Israeli misreading of Egyptian short-range intentions—for the Egyptian action in Syria and Jordan was hardly of any immediate military significance—is an important factor in the future of the area.

AS THE EGYPTIANS SAW THE SINAI CAMPAIGN





TOP RIGHT, FIRST PHASE: THE ISRAELIS CROSS THE SINAI BORDER IN THREE THRUSTS. WHITE ARROWS INDICATE MAJOR THRUSTS.

TOP LEFT, SECOND PHASE: THE EGYPTIAN FORCES CROSS THE SUEZ CANAL TO THE SUPPORT OF THEIR COVERING FORCES IN THE SINAI. MAJOR OBJECTIVE: THE ASSEMBLY AREA OF BIR GIFGAFA (SHADED ON MAP). A SMALLER EGYPTIAN FORCE ADVANCES FROM PORT SUEZ TOWARD MITLA PASS.

CENTER RIGHT, EGYPTIAN ORDER OF BATTLE: A TOTAL OF SIX BATTALIONS IN THREE GROUPS DEFEND THE NORTHERN SINAI, PLUS SOME MOBILE ELEMENTS IN THE DESERT AND ONE ARMORED TASK FORCE. BULK OF EGYPTIAN TROOPS IS CONCENTRATED IN THE NILE DELTA (BLACK TRIANGLE), TO FACE THE EXPECTED BRITISH-FRENCH OPERATION.

CENTER LEFT, THIRD PHASE: IN VIEW OF IMMINENT FRANCO-BRITISH ATTACK UPON SUEZ CANAL ZONE, EGYPTIAN COMMAND ORDERS THE EVACUATION OF THE SINAI PENINSULA. MAJOR BATTLE UNITS WITHDRAW FROM BIR GIFGAFA CONCENTRATION AREA. ABU AWEIGILA STILL TIES UP MAJOR ISRAELI THRUST.

LOWER LEFT, FINAL PHASE: BULK OF EGYPTIAN FORCES, AFTER SOME LOSSES MAINLY DUE TO BRITISH AND FRENCH AIR INTERVENTION, SUCCESSFULLY CROSS THE SUEZ CANAL.

SOURCE: ARTICLE BY PRESIDENT GAMAL ABDEL NASSER, "THE STORY OF THE ISRAEL WAR," IN AKHER SAA, CAIRO, 5 DECEMBER 1956.

FIGURE 2.

It seems to indicate that the Israelis will prefer to face the certain but brief dangers of a war with their neighbors than the more uncertain but longer-lasting dangers of "brinkmanship."

Order of Battle

While both Egyptian and Israeli sources are in almost total agreement on the Israeli Order of Battle, there exists a wide area of disagreement as to the number of Egyptian forces actually engaged in the Sinai Campaign.

According to American unofficial estimates, Egyptian forces in the Sinai on A-Day (29 October) amounted to about 30,000 men. General Dayan, the Israeli commander in chief, estimated the Egyptian forces in the Sinai at 40,000. This probably includes A+1 and A+2 reinforcements. In the Egyptian view, as expressed by President Gamal Abdel Nasser in a long article in the Egyptian magazine *Akher Saa*, those covering forces in the Sinai amounted to a total of only six battalions in three groups in the El Arish-Rafah-Abu Aweigila triangle (Sketch 3 of Figure 2) plus one armored battalion and headquarters and service troops at El Arish and some smaller garrison forces in various oases throughout the plateau. The positions along the Red Sea were held by a special Red Sea Force of about two battalions centered around Ras Nuzrani and Sherm el Sheikh at the entrance of the Gulf of Aqaba.

This order of battle is contradicted by Israeli sources as well as by independent sources who have studied the situation on the spot during recent months. Such sources substantially agree that at least the bulk of the 8th Infantry Division and the 3d Infantry Division was deployed in Sinai on A-Day.

In brief, the Egyptian Order of Battle on A-Day seems to have been: the 3d Infantry Division, with three infantry brigades and a mobile force in the El Arish-Abu Aweigila area; the 8th Infantry Division with one Regular Army brigade and one brigade of Palestine Army of Liberation forces, plus irregular *Fedayeen* (Self-Sacrificers) elements, in the Gaza Strip north of Rafah.

The oases and other important points in the center of the peninsula were held by two to four battalions of Light Mobile Frontier Forces equipped with armored jeeps and halftracks. Camel-borne reconnaissance elements of the regular border patrol were used for advance screening purposes and proved their worth in at least one sector. The forces in the southern Sinai area were as indicated above. One fully armored brigade equipped with about 70 Soviet *T-34's* was available for almost immediate commitment in the Bir Gifgafa area in the north-central Sinai.

These forces in the Sinai were backed up by the following forces available in the Nile Delta area: the 1st and 2d Infantry Divisions, an additional armored brigade in the canal area, the 4th Armored Division in the Cairo area, plus one airborne battalion. The Egyptian Air Force has been estimated at:

130 *Vampire* and *Meteor* jet fighters
90 to 125 *MiG-15* jet fighters
10 to 12 *MiG-17* jet fighters
50 *Il-28* twin-jet bombers
20 to 40 *C-46*, *C-47*, and *Il-14* transport planes.

According to an Israeli source some *MiG-19* Soviet jet fighters of an advanced model (in the American *Century*-fighter class) were sighted but not engaged in combat by Israeli Air Force planes. On the ground the Egyptian Army had received important amounts of Soviet *T-34* and *Stalin III* tanks and *BTR-152* Soviet six-wheel troop carriers, as well as appropriate amounts of signal and support equipment. Egyptian naval forces also had been reinforced and were, in any case, far superior to those of the Israelis.

Egyptian Dilemma

Tactically, the Egyptian commander in the Sinai was caught in a dilemma: whether the Egyptian or non-Egyptian

figure was true, the Egyptian forces stationed in the Sinai were definitely *not* in a position to withstand a determined Israeli attack, strung out as they were over vast expanses of desert with the bulk of their forces bottled up in the northernmost corner of the peninsula where they practically invited Israeli encirclement. On the other hand, President Nasser could not afford politically to abandon most of the Sinai and the explosive Gaza Strip. had proved effective against German-Turkish attacks in 1916 and also as a point of departure for offensive operations into Palestine.

This advance mortgaging of operational freedom was to prove fatal to the Egyptian defense of the Sinai in 1956.

Quick, Quiet Mobilization

The Israeli Order of Battle made the best of the very handicaps of Israel's sit-

THE ISRAELI ORDER OF BATTLE

Designations as released by Israeli High Command	Designations as released by Egyptian High Command
1st Task Force	*Brigade Group 77*
'A' Infantry Brigade	1st (?) Infantry Brigade
'L' Armored Brigade	27th Armored Brigade
	11th and 12th Infantry Brigades
2d Task Force	*Brigade Group 38*
'B' Infantry Brigade	4th Infantry Brigade
'C' Infantry Brigade	37th Infantry Brigade
'M' Armored Brigade (Reinforced)	7th Armored Brigade
Separate Units	
'X' Airborne Brigade (–)	202d Airborne Brigade (minus Airborne Battalion 809)
'D' Infantry Brigade (Motorized)	9th Reserve Brigade (Motorized)
'E' Infantry Brigade (+1 BCT)	(One of the three Infantry Brigades of Group 77).

Figure 3.

Thus the Egyptians were committed in advance to a type of rigid defense against which they had been specifically warned previously by a commission of German military experts. The latter, remembering some of the experiences of the First World War, advocated the defense of the Suez Canal area from the north-south ridge line running through the Sinai about 30 to 40 miles west of the canal. That line

uation. In a state about 1,000 square miles smaller than New Jersey, mobilization can be carried out in an inobtrusive way, literally by word of mouth, with the subordinate unit commanders actually picking up their own men and trucks from their homes or places of work a few hours before the unit moves into its initial assembly area. With military training compulsory for both men and women and only

a small core of career soldiers, the Israelis rely on this militia type arrangement to constitute their battle formations as the mission requires them.

In the case of the Sinai Campaign, it is likely that the decision to act was taken after the constitution of the joint Egyptian-Jordanian-Syrian military command on 22 October 1956. Whatever the timing it is certain now that no unit was alerted before A−4, or Thursday, 25 October, with the bulk of the units still moving piecemeal into their assembly areas as late as A+2, 31 October.

Thus far no Israeli or Western source has published the exact order of battle of the Israeli forces engaged in the campaign. However, in March 1957 the Israeli Army released a memorandum giving the over-all organization of the various Sinai task forces, identifying subordinate units by call letters only. In his article in *Akher Saa*, President Nasser released the identification numbers of the Israeli forces as known to Egyptian intelligence sources. Since the numbers correspond closely to the unidentified units disclosed by the Israelis, it is logical to accept the figures as accurate (Figures 3 and 4).

Weaker in the Air

In terms of air and naval power the balance definitely was in favor of Egypt until France and Great Britain intervened in the war. In the air the Israelis still had to rely in part upon World War II vintage *Mustang* fighter bombers (about 30 to 50), a smaller number of obsolescent French *Ouragan* jet fighters, 30 *L-5* type liaison planes, and about 40 to 50 *C-46* and *C-47* transport planes. A few hopelessly obsolete (even in the Middle East) *B-17's* still are on the muster rolls. However, the backbone of the Israeli Air Force is a force of between 40 and 50 French *Mystère IV* jet fighters, most of which reached Israel only a few weeks before the outbreak of hostilities. It is clear that such a force, even in skilled hands, was no match against what Egypt had to offer.

On the sea Israeli naval forces are realistically tailored to their tactical mission of protecting the Israeli coastline; hence they are composed of light naval craft, in the main of the motor torpedo boat type, with a few frigates and destroyer-escorts. Three amphibious squadrons equipped with *LCI's*, *LCM's*, and *LCT's* complete the naval picture.

On the ground the Israelis also had to contend with material difficulties. The United States, which had supplied weapons to several Arab States, had delayed action upon Israeli requests for arms shipments. Israel, therefore, relied upon France and Britain for its armament, with the exception of some *"Super Sherman"* tanks and other United States equipment received during the period 1948-51. The mainstay of its armor is the French 13-ton *AMX* tank with its high-velocity 75-mm antitank gun. This tank gave an excellent account of itself against the far heavier Soviet models used by the Egyptians. Specifically, Israeli-built weapons are limited to submachineguns, mortars, and other light equipment.

Flexible, Tailored Brigades

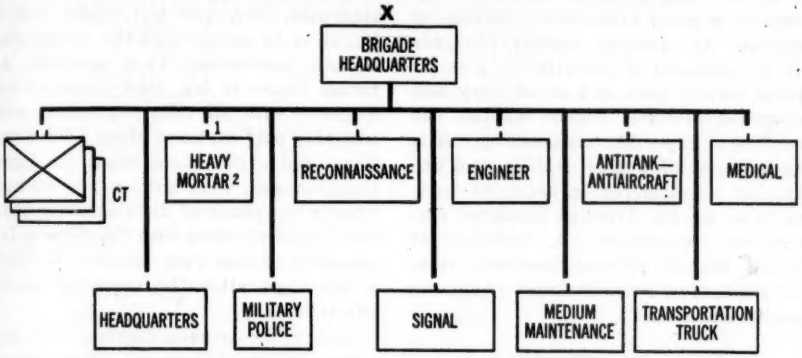
In terms of over-all strength, Israeli forces directly engaged in the Sinai Campaign have been variously estimated at between 50,000 and 60,000 troops, including rear services. The average strength of the Israeli brigade is between 6,000 and 7,000 men, with the airborne brigade being considerably lighter. Likewise, the 9th Infantry Brigade was known to have numbered only 1,800 men. Thus the Israeli forces nowhere reached the numerical superiority ratio usually considered desirable in offensive warfare.

These, then, were the men and the equipment that were to fight the battle for the Sinai Peninsula.

Contrary to the Egyptian or Western organization on the basis of the division, the Israeli major tactical unit is the "bri-

ISRAELI ORGANIZATIONS

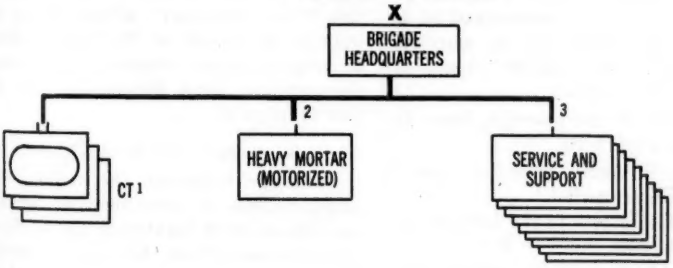
INFANTRY BRIGADE



1 SOME OF THE SERVICE AND SUPPORT UNITS MA Y BE LESS THAN COMPANY SIZE.

2 CAN BE EXPANDED INTO A HEAVY MORTAR BATTALION OR A 105-MM HOWITZER BATTALION.

ARMORED BRIGADE



1 NORMALLY ONE BATTALION COMBAT TEAM IS EQUIPPED WITH "SUPER-SHERMAN" TANKS, ONE WITH FRENCH AMX'S, ONE WITH HALFTRACKS.

2 MAY BE A SELF-PROPELLED GUN UNIT.

3 SAME SERVICE AND SUPPORT UNITS AS INFANT RY BRIGADE, BUT COMPLETELY MOTORIZED.

A COMMAND TEAM MAY BE SUPERIMPOSED OVER SEVERAL BRIGADE HEADQUARTERS, THUS PERMITTING THE CENTRALIZED CONTROL OF SEVERAL BRIGADES AS A BRIGADE GROUP, SIMILAR TO THE ASSIGNMENT OF DIVISIONS TO A CORPS OR CORPS TO A FIELD ARMY IN THE US ARMY. THIS WAS DONE IN THE SINAI CAMPAIGN IN SEVERAL CASES.

FIGURE 4.

gade" designed as a unit of three battalion combat teams (BCT). The brigade group is merely a temporary tactical unit with no known specific characteristics, composed of as many brigades as the mission requires. An average infantry brigade will be composed of three BCT's plus attached service units and an artillery battalion. An armored brigade includes one battalion of *Super Sherman* medium tanks, one battalion of French *AMX's*, and one battalion of armored infantry in half-tracks or trucks. Armored personnel carriers are nonexistent. A battalion of French Brandt 155-mm howitzers later was attached to Brigade Group 77 for use against Khan Yunis.

Three Israeli Objectives

The military objectives of the Israeli forces, like those of their opponents, were conditioned by the political situation. Politically, Israeli Prime Minister Ben-Gurion acknowledges the great outlines of the campaign had been determined at a "historic cabinet session on the morning of 2 October." Three major objectives seem to have been defined:

1. Destruction of the guerrilla bases in the Sinai and Gaza Strip.

2. Crippling Egyptian offensive capacities for prolonged period.

3. Gaining free access to the Red Sea via the Gulf of Aqaba.

According to all available sources this was to be done through the total destruction of Egyptian battle formations and supply bases in the Sinai. The physical annihilation of Egyptian troops definitely was not a part of the war objectives. General Dayan is quoted to have said:

> *We did not want to kill a lot of Egyptians. There are 40 million Arabs, so what's the use of killing 5,000, 10,000, 15,000 of them? It was not even vital to destroy or take their equipment. They could always get more from Russia. What mattered was their defeat.*

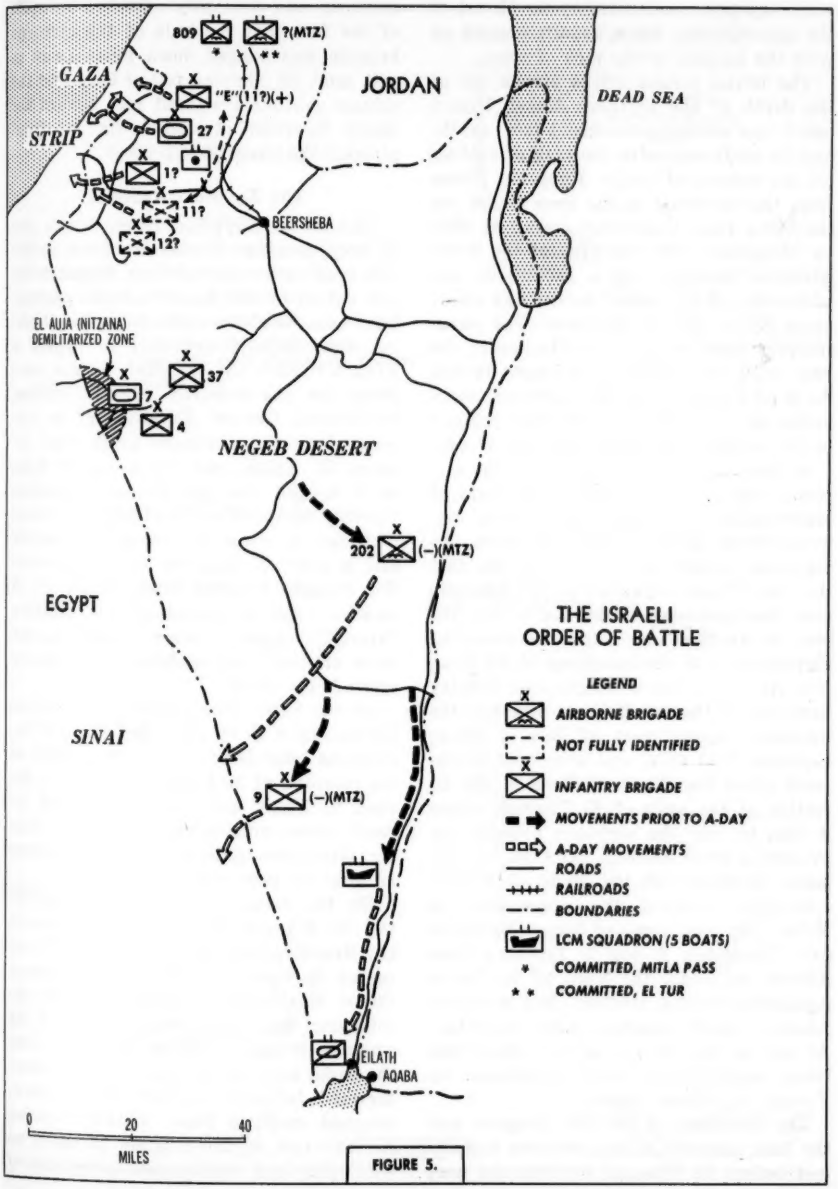
This viewpoint apparently was shared by all commanders down the line; prisoners were only detained and herded off to camps when this was tactically necessary; otherwise, they were left to flee back to Egypt or to merge with the surrounding civilian population. Thus although the Israeli forces in one week destroyed two divisions with all their supporting services, they only captured about 5,000 Egyptians, and even among those, the Egyptians contend, were quite a few civilians who, in the chaos of disintegrating units, were captured along with the soldiers. The prisoners of war were returned to Egypt a few days after the cease-fire became effective.

Briefly, the Israelis operated with four major columns, three of which had as their final objective the Suez Canal—or, as it turned out after the 31 October French and British ultimatum to Egypt and Israel, a 10-mile zone west of the canal. The last column was to capture the "little Gibraltar" which Egypt had built at the mouth of the Gulf of Aqaba to prevent Israeli shipping from passing through the Tiran Straits into the Red Sea (Figure 5).

Israeli Attack—A-Day

From the beginning the major Israeli emphasis was on movement rather than on contact, with maximum use of the inherent speed of the tools of war used in the operation: airborne thrusts and motorized columns to link up with them. *Contrary to many assertions, the Israelis did not "throw away the rule book"—but they bothered to read the fine print and used an up-to-date edition.*

Thus they followed the steps of Rommel, Guderian, and Patton in Panzer warfare and successfully combined them with the "vertical envelopment" concepts of Taylor, Gavin, and Student. *Like all those generals they naturally worried about logistics, but did not let that worry bog them down to a crawl.* And as with Patton and Gude-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40
MILES
THE ISRAELI ORDER OF BATTLE
LEGEND
AIRBORNE BRIGADE
NOT FULLY IDENTIFIED
INFANTRY BRIGADE
MOVEMENTS PRIOR TO A-DAY
A-DAY MOVEMENTS
ROADS
RAILROADS
BOUNDARIES
LCM SQUADRON (5 BOATS)
* COMMITTED, MITLA PASS
** COMMITTED, EL TUR

FIGURE 5.

rian, logistics, accelerated by the thrust of the spearheading force, usually caught up with the Israelis in the nick of time.

The initial Israeli attack struck out of the depth of the southern Negeb Desert into a vast scooping movement from southeast to northwest with the task of cutting off the retreat of major Egyptian forces from the northeast to the Suez Canal via the Mitla Pass. Operations began at 1645 on 29 October with the drop of the 809th Airborne Battalion at a crossroads 150 miles west of the Israeli border and about seven miles east of the pass. The paratroopers were under orders to secure the pass until the arrival of stronger forces. As in all Israeli units, the communications personnel were female and they jumped in the combat area along with the troops.

At the same moment the rest of the airborne brigade, after a hectic 48 hours of organization and reequipment with six-wheel-drive trucks, began to cross the Egyptian border at El Kuntilla. The fact that the brigade organized at Ein Khussub near the Jordanian border led to war jitters in Jordan and helped confuse the Egyptians as to the intentions of the Israelis. Farther south a mechanized cavalry battalion of the 9th Brigade attacked the Egyptian border post of Ras el Naqb, captured it at 1900, and proceeded northward along the Pilgrims' Road in the direction of the oasis of El Thamad where it was to join the airborne brigade approaching from Kuntilla. At 1900 the airborne battalion at the Sudr el Heitan crossroads reached the approaches to Mitla Pass and received heavy Egyptian fire. Thereupon it dug in for all-around defense to await the drop of its heavy equipment (jeeps, mortars, and recoilless cannon) which occurred after nightfall. As will be seen later, it is very likely that these supply drops were undertaken by French Air Force planes.

The battalion of the 9th Brigade and the lead elements of the airborne brigade met before El Thamad at 0300 the next morning and promptly attacked in spite of the fact that the bulk of the airborne brigade was bogged down miles away in soft sand. El Thamad fell at 0430 and the column continued without rest toward the major Egyptian stronghold on the Sinai plateau, the oasis Nakhl.

The Egyptian Reaction

The initial Egyptian reaction was one of deep surprise. It was too soon, in the late evening hours of A-Day, to gauge the full extent of the Israeli attack, particularly because at that time Egyptian thinking was more conditioned to expect a French-British attack. Still, orders were given for one armored brigade (trained by German General Farnbacher) to proceed along the northern shore road toward El Arish, and for a major force built around the 1st Armored Brigade, recently equipped and trained with Soviet material, to cross the canal at Ismailia and to proceed along the Turkish Road to Bir Gifgafa (Sketch 2 of Figure 2). A smaller force composed of two infantry battalions, some armored elements, and some artillery started from Port Suez toward Mitla Pass.

At the same time Egyptian Air Force planes began to fly their first sorties. The airborne brigade was first hit at 0700 on the morning of 30 October (A+1) on the road to Nakhl and, according to an Israeli source, suffered many casualties. The Egyptian communiqué of the day claimed 12 armored cars were destroyed.

On the Israeli side the remainder of the 9th Brigade left its assembly area in the Negeb at 0500 on 30 October and proceeded due south via El Kuntilla toward Ras el Naqb which it reached at 0700 the following day. Along Pilgrims' Road the airborne brigade reached Nakhl at 1500 the same day (A+1) in its urgent drive forward to link up with the battalion dropped at Mitla Pass. Without waiting for the rest of the brigade to catch up with the lead units, now composed of

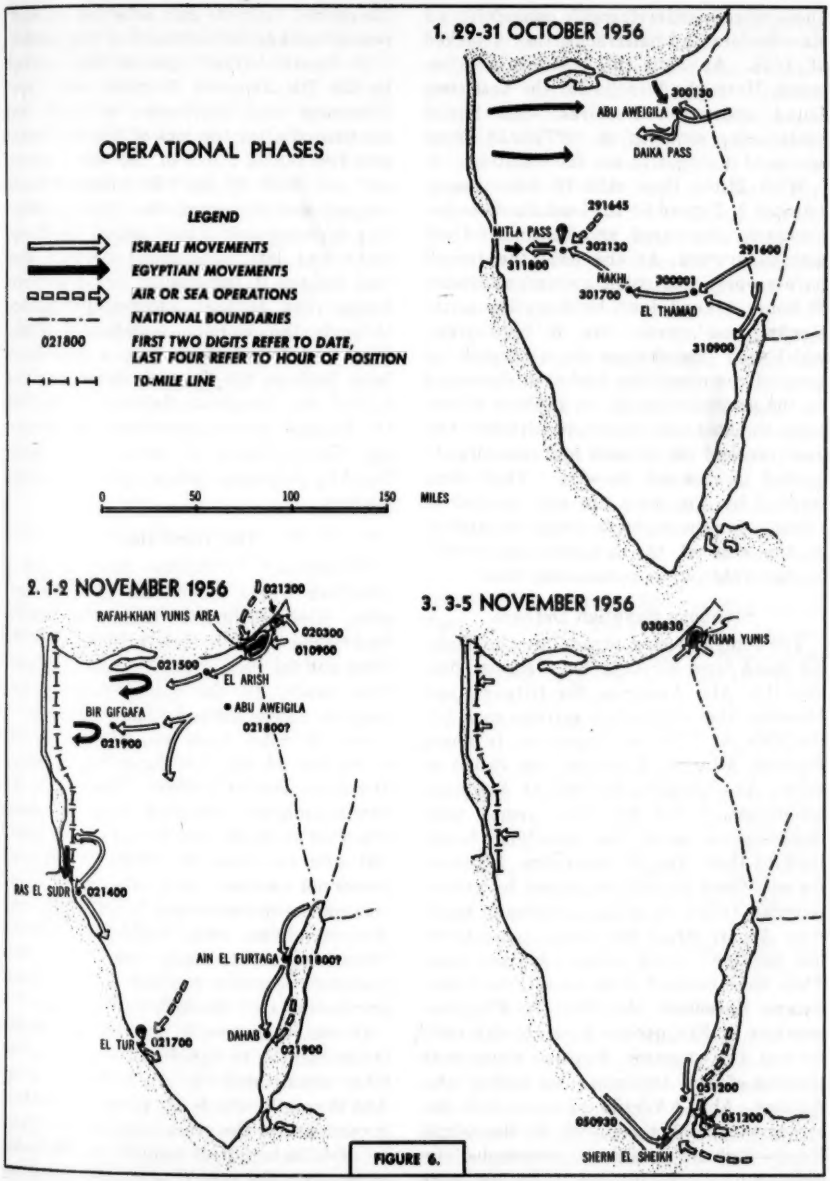
OPERATIONAL PHASES
LEGEND
ISRAELI MOVEMENTS
EGYPTIAN MOVEMENTS
AIR OR SEA OPERATIONS
NATIONAL BOUNDARIES
021800
FIRST TWO DIGITS REFER TO DATE, LAST FOUR REFER TO HOUR OF POSITION
10-MILE LINE
0 50 100 150 MILES
1. 29-31 OCTOBER 1956
300130
ABU AWEIGILA
DAIKA PASS
291645
MITLA PASS
302130
311800
291600
NAKHL
300001
301700
EL THAMAD
310900
2. 1-2 NOVEMBER 1956
021200
RAFAH-KHAN YUNIS AREA
020300
010900
021500
EL ARISH
ABU AWEIGILA
021800?
BIR GIFGAFA
021900
RAS EL SUDR
021400
AIN EL FURTAGA
011800?
EL TUR
021700
DAHAB
021900
3. 3-5 NOVEMBER 1956
030830
KHAN YUNIS
051200
050930
051200
SHERM EL SHEIKH

FIGURE 6.

about three understrength companies on six-wheelers and halftracks, they attacked at 1645. At 1730 the position was secured. Here, the Israelis for the first time found underground stores with Soviet equipment; some of it (*BTR-152* troop carriers) was put to use immediately.

With Mitla Pass still 75 miles away, (Sketch 1, Figure 6) the lead elements immediately regrouped and continued their march forward. At the pass the Israeli paratroopers had spent an uncomfortable 36 hours, pinned down by Egyptian aerial strafing and mortar fire. A light plane which had landed near them to pick up some of the casualties had been destroyed on the ground. Finally, at 2100 on 30 October the lead vehicles of the airborne brigade reached the airhead and immediately pushed on toward the pass. They were stopped by Egyptian fire and decided to regroup for the night, to await the arrival of the rest of the brigade—and sorely needed water, ammunition, and fuel.

Stubborn Egyptian Defense

The central sector, straddling the Turkish Road from El Auja (in Hebrew: Nitsana) to Abu Aweigila, Bir Gifgafa, and Ismailia, also stirred into activity on A+1, the 30th. At 0130 the Israeli 4th Infantry Brigade attacked Quseima but failed to secure its objectives. In fact, an Egyptian counterattack led by jeeps armed with machineguns drove the attacking forces back to their line of departure. A second Israeli attack at 0430, supported by armor, likewise failed to make significant headway. An air strike was called against two hill positions which commanded the area. They were bombed with napalm and soon became untenable. At 1100 the Egyptian garrison of El Quseima began to fall back toward the strongly fortified crossroads position of Abu Aweigila [also spelled Abu Ageila]. Abu Aweigila perhaps was the strongest fortified complex in the whole Sinai—high hill positions commanded the surrounding terrain and a British-built abandoned concrete dam afforded excellent protection against artillery of any caliber.

A frontal attack against the position by the 7th Armored Brigade with *Super Shermans* and halftracks at 1400 was abandoned after the loss of five halftracks and two tanks. Parts of the 4th Infantry and one BCT of the 7th Armored broke contact and bypassed the whole position in a wide arc over a path which the Egyptians had left undefended because they had judged it impassable for heavy vehicles. The Israelis successfully pushed through the equally undefended Daika Pass and found themselves a few hours later back on the Turkish Road, but now behind the Egyptian defenders. At 1800 the brigade group committed the remaining 37th Infantry Brigade in the battle for Abu Aweigila, but without immediate success.

The Third Day

Wednesday, 31 October dawned over a situation where much still hung in balance. Along Pilgrims' Road the Israelis had linked up with their airhead at Mitla Pass but the pass itself was still in Egyptian hands. In the center fighting had bogged down around Abu Aweigila, a scant 30 miles from the border. In the north the 3d and 8th Egyptian Infantry Divisions were still intact. Worse still, the Soviet-equipped armored brigade—about 100 *T-34's*, 30 *SU-100* self-propelled guns, 100 armored cars or *BTR-152* armored personnel carriers, and 200 trucks—now was on the move toward Bir Gifgafa and Abu Aweigila, while farther south the Egyptian combat team from Port Suez presented a grave risk for the exhausted paratroopers of the airborne brigade.

It was, therefore, of utmost importance to the Israelis to liquidate the tactical liability constituted by Mitla Pass and by Abu Aweigila which, by virtue of the fact it commanded the crossroads, had reduced to a trickle logistical support for the units of the 38th Brigade Group now operating

on both sides of the Turkish Road. At 0630 on A+2 the 1st BCT of the 7th Armored Brigade captured Abu Aweigila crossroads (but not the outlying forts), part of the brigade veering north to repel a half-hearted attempt by Egyptian armored elements from El Arish to break the pincer around Abu Aweigila.

The remainder of the 7th Brigade—now considerably weakened by losses and by dissipation to man roadblocks it had been compelled to constitute against possible Egyptian reactions from Bir Gifgafa and El Arish—turned due east again to attack the major Egyptian position at the dam. Here the Egyptian forces, supported by 12 British *Archer* tank destroyers and 13 57-mm antitank guns, stood their ground. The battle lasted from 1200 until 2000. One by one the Egyptian guns fell silent. Losses had been heavy on both sides, but the position finally fell to the Israelis. Leaving the elimination of the two remaining strong points to the still fresh 37th Infantry Brigade, the two other brigades of the 38th regrouped to face the formidable "Soviet Brigade" which, in spite of Israeli air strikes, had almost reached its assigned deployment area.

Hand-to-Hand Combat

In the Mitla Pass area the Israeli paratroop commander decided to gain the high ground of the pass before the arrival of the Egyptian reinforcements he knew were on the way from Suez. The difficulty of the terrain precluded night fighting. Thus he decided to attack at high noon. At 1200 of the 31st, Israeli paratroopers riding on top of their armored vehicles and trucks entered the pass where they were greeted by murderous fire from all sides. An Israeli ammunition carrier and a gasoline truck exploded and blocked the pass; there was no alternative left but to dislodge the Egyptians in hand-to-hand combat. By 1800 on A+2 the pass was in Israeli hands, although still under strafing by Egyptian Air Force *MiG's*.

The Israeli Air Force, however, had not remained inactive. The Egyptian column from Suez had been under continuous strafing for several hours and clearly showed it. On the other hand, the airborne brigade had reached the end of its tether, with both officers and men sleeping on their feet after nearly 96 hours of continuous movement. Even a moderately sustained attack probably would have gravely endangered the unit.

At about this time, on the 31st, France and Great Britain handed their ultimatum to President Nasser, followed a few hours later by the first Anglo-French air attacks. Only a few more hours had passed when, at dawn of A+3, 1 November, President Nasser ordered the withdrawal of all troops from the Sinai Peninsula. The airborne brigade was saved by the bell.

Deep in the southern corner of the front the 9th Brigade, after an arduous climb over roadless terrain, had reached Ras el Naqb at 0700 of the 31st. There, two alternate routes were open to its commander—a long but easy one via either the Turkish or Pilgrims' Roads, or a short but unreconnoitered one over caravan paths and across the southern Sinai mountains to Sherm el Sheikh. He decided for the latter. Each of the 220 vehicles of the brigade received a week's rations, fuel, and water. In case of breakdown it was given four hours to attempt repairs; failing this, it was to be cannibalized and its occupants transferred to other vehicles.

After almost 24 hours of stagnation, the Israeli "blitz" was again on the move.

Breakthrough in the North

With evacuation of the Sinai now the avowed aim of the Egyptians (Sketch 4 of Figure 2), the campaign developed into a race for communication hubs, with the Egyptians trying to hold them until their northernmost forces had extricated themselves and the Israelis swinging increas-

ingly deeper pincers around the retreating Egyptian columns.

Along the Gaza Strip operations began at 2000 on 31 October with halftrack-borne Israeli infantry attempting to break head-on through the minefields and 11 fortified hill positions around Rafah. The first attack aborted, and a call was made for nearby naval gunfire support which lasted from 2400 until 0200 of 1 November. At 0530 the Egyptian defenses began to crumble and about one hour later Israeli motorized infantry, supported by BCT "A" and BCT "B" of the neighboring 27th Armored Brigade, reached Rafah Junction south of the city. The northern corner of the "Iron Triangle" of Rafah-Abu Aweigila-El Arish was seriously breached. BCT "C," until now held in reserve, occupied Rafah railroad station at 0900 and helped in the mopup, while BCT "B"—which had munitioned and refueled in the meantime—veered south toward El Arish. The 8th Egyptian Infantry Division in Khan Yunis and Gaza was cut off from the Sinai.

BCT "B," after a brief fire fight with Egyptian artillery at 1230 north of El Arish, reached the outskirts of the city by nightfall but fell back five miles to give itself and the rest of the brigade, now strung out over 30 miles and fighting in two directions, a chance to regroup during the night.

In the central sector, Brigade Group 38 now faced the 1st Egyptian Armored Brigade which, although harassed by Israeli strafing, still was a formidable force. No longer intent upon offensive action, in view of the general withdrawal order, it still sought to maintain its position as long as possible to give Egyptian units withdrawing from the Sinai plateau and the northern triangle a chance of reaching the canal.

At Mitla Pass the airborne brigade, refreshed after 24 hours of rest—it had lost a total of 40 dead, 100 wounded, and 13 jump casualties—yielded its position to infantry units, and turned due south in the direction of the Gulf of Suez. In the wastes of southern Sinai the 9th Brigade continued its trek to Sherm el Sheikh, occupying the small oasis of Ain el Furtaga.

Organized Resistance Ends

In the north the reorganized 27th Armored Brigade began the final attack against El Arish on Friday, 2 November, at 0630, after an Israeli air strike west of the city reported that the road between El Arish and El Qantara was clogged with retreating vehicles. The light *AMX's* of BCT "C" had a devastating effect upon the already disorganized columns, and at 1500 civil authorities surrendered El Arish to General Laskov, commander of the Israeli Armored Forces.[1]

Large depots with brand-new Soviet material were captured at El Arish, which had been the headquarters of the Sinai Command, including a new Czech radar station and plentiful supplies of Soviet antifreeze and other Arctic equipment which apparently had been delivered to the Egyptians by a sort of *snafu* not entirely alien to other armies.

In the Gaza Strip itself the 8th Division now was under attack from the last uncommitted Israeli infantry unit, Brigade "E," which attacked Gaza on 2 November at 0300, while reserve units from the neighboring Israeli villages attacked Deir el Ballah, two miles south of Gaza. Hill 88, the major strong point covering the city, fell after intensive fire from Israeli 120-mm mortars. Gaza Station was reached at 0830. At 1200 on A+4 Lieutenant General Fuad El-Digwi, Governor General of the Gaza Strip, surrendered his command to Colonel Assaf Simchoni, Israeli commanding officer of the southern front.[2]

In the central sector on A+4 the 7th

[1] By May 1957 he was commander of the entire south Israeli area.

[2] Simchoni was shot down by Jordanian AAA on 7 Nov 1956, when his plane lost its way in a sandstorm. He was posthumously raised to the rank of brigadier general.

Armored Brigade finally met the Egyptian 1st Armored Brigade on a ridge near Bir Gifgafa, with 70 Soviet tanks facing 34 Israeli tanks, of which one company was composed of the light *AMX's*. In a running battle which lasted from 1400 until nightfall, the *AMX* proved a match for the heavier but less maneuverable Soviet tanks.

By the end of the day the brigade was retreating toward the Suez Canal in a state of total dislocation. However, the rapid pace of the past days also had levied its toll upon the Israelis: when the 7th Armored Brigade reached the 10-mile line opposite Ismailia on the Suez Canal it was composed of exactly eight combat-worthy vehicles, four of which were captured Soviet tanks.

The two infantry brigades following in the wake of the 7th Armored occupied the newly built airfield of Bir Rod Salim and the extensive underground depots nearby, while the last two strong points of Abu Aweigila—their hopes for rescue now all but gone—surrendered to the Israeli forces that had bottled them up since the breakthrough.

Use Paratroopers Again

South of Mitla Pass the somewhat refitted airborne brigade pushed on across the desert toward the Red Sea coast on the Gulf of Suez, occupying the small oil-producing center of Ras el Sudr after a brief firefight at 1400 on 2 November, thus reaching the new Red Sea Road to the southern tip of the peninsula where Egyptian coastal artillery still barred the Tiran Straits. Now the picture of the initial A-Day attack was repeated on a smaller scale: while the airborne brigade rolled southward on Red Sea Road, two Israeli paratroop companies were dropped at 1700 over the small port town of El Tur (referred to in the press as Tor), 160 miles south of Ras el Sudr. They secured the town and airport within two hours, and at about 1930, Israeli Air Force planes landed an infantry battalion, jeeps, and mortars for the airhead force.

On the other side of the Sinai Peninsula, the 9th Brigade reached the small oasis Dahab, its advance guard suffering some casualties in a sudden contact with an Egyptian camel patrol. The column then pushed out of the mountains toward the sea where it met at 1900 with a supply ship from Eilath and took on water, spares, and ammunition. But the end had come for Egyptian resistance throughout the Sinai Peninsula. At 1200 on 2 November, A+4, only two Egyptian positions remained east of the Suez Canal—the pocket of Khan Yunis in the Gaza Strip, containing part of the Egyptian 8th Infantry Division and its commander, Major General Yusuf Abdullah El-Agroudi, and the still intact Red Sea Force under Colonel Raouf Mahpuz, centered around Sherm el Sheikh and Ras Nuzrani. Both positions were fully prepared for sustained defense, with concrete bunkers, antitank guns, and field artillery.

The attack against Khan Yunis in the afternoon of 2 November by elements of the 27th Armored Brigade covering a force of Israeli infantry on halftracks bogged down under the fire of the Egyptian 105-mm howitzers. The Israelis brought their French 155-mm howitzers to bear and after an artillery duel that lasted nearly all night and described as the heaviest of the entire campaign, the outgunned and outranged Egyptian artillery fell silent. At 0630 on 3 November the first Israeli armored elements entered Khan Yunis. General El-Agroudi surrendered at 0830. A single Egyptian platoon held out until noon. It was annihilated by rocket fire from *Mustang* fighter bombers in order to avoid unnecessary casualties. The campaign in the north was over.

Converge on Last Objective

In the south Sinai the airborne brigade linked up with the elements landed at El Tur on 3 November and began its drive

south to Sherm el Sheikh, mopping up stray Egyptian troops as it went along. The 9th Brigade, still struggling with the roadless terrain, reached the oasis of Naqb in the afternoon of 4 November. The Egyptian camel cavalry patrol which held Naqb withdrew to Ras Nuzrani, which had been under intermittent Israeli air attack since 2 November. The garrison of Ras Nuzrani (with the exception of a rear guard which doggedly fought on until noon on 5 November when the Israelis were able to bring their heavy mortars to bear upon it) withdrew to Sherm el Sheikh even before the arrival of the 9th Brigade, since the deepwater landing facilities of Sherm el Sheikh permitted a possible evacuation by sea.[3]

On Sunday, 4 November at 1600 the 9th Brigade, somewhat worse for wear from its weeklong ordeal in the waterless wastes of the southern Sinai, made contact with the Sherm el Sheikh perimeter. After a few hours for rest and reorganization, the 9th attacked at 0330 on 5 November with six light companies spearheaded by half-tracks. The attack, facing well-prepared and wired-in positions and led by reserve troops who had not had a full night's sleep in 10 days,[4] bogged down. The brigade commander, Colonel Yoffe, called for an air strike by *Mustangs*. They accomplished their mission, but Egyptian anti-aircraft fire proved deadly for the slow vintage planes: assertedly several planes were lost. Under cover of the air strike the brigade resumed the attack and broke through the Egyptian defenses at 0830. The commander of the Red Sea Forces surrendered at 0900. A few minutes later the advance guard of the reinforced parachute brigade appeared around the southern tip of the Sinai Peninsula, while Israeli Navy *LCM's* landed troops on the islands of Tiran and Senafir across the straits from Sherm el Sheikh. By 1200 on 5 November 1956 (A+7) Israel was master of the entire Sinai Peninsula.

Outside Aid

The question of outside aid for each of the belligerents no doubt will remain a subject of discussion for a long time to come. On the Egyptian side it was obvious that the greater part of the modern equipment used was of Soviet bloc origin. Israeli assertions that during the tank battle of Bir Gifgafa Russian voices were heard over the tank intercoms have not been verified.

On the Israeli side France emerged as the major provider of outside aid. This was in fact known as early as mid-November 1956 when several sources indicated that French Air Force squadrons apparently had provided an air defense umbrella for Israel's major population centers. Likewise, it appears that the parachute drops of heavy equipment, both at Mitla Pass and probably at El Tur, hardly could have been the work of the Israeli Air Force which, as far as is known, does not possess any *C-119 Boxcars*, while the French on Cyprus were amply provided with *Nord-2500* cargo planes, a French version of the *C-119*. Again, according to French conservative sources, such French planes did participate in supply operations in the Sinai as of 1 November, or A+4.

It also seems confirmed that a French cruiser, the *Georges-Leygues*, participated in the naval bombardment that softened up the resistance of Rafah. A somewhat sensationalist book which has recently appeared in France also credits Israel-based French *F-84's* with the destruction of 20 *Il-28* jet bombers at the Egyptian airbase of Luqsor, and the French destroyer *Kersaint* (not Israeli naval craft, as had been announced) with the crippling of the Egyptian destroyer *Ibrahim-el-Awal* off

[3] This, however, was no longer possible. The two Egyptian warships stationed in the Gulf of Aqaba, the armed freighter *Aida* and the training frigate *Damietta*, had been sunk, the former by Israeli air attack, the latter by the cruiser *HMS Newfoundland*.

[4] The 9th, composed of reservists from Haifa and Galilea (northern Israel), had been activated on 26 Oct (A-Day minus 3). Its total strength was 1,800 men.

Haifa. However, these latter assertions must await further independent confirmation.

UN Unwittingly Involved

The United States and the United Nations remained outside the conflict. Still, a delicate situation arose when the United States Sixth Fleet, on maneuvers, crossed the path of the Anglo-French invasion fleet. It also has been asserted that the close anchoring of two US destroyers near the two new Egyptian destroyers of the Soviet *Skory* class effectively saved the latter from destruction by a French squadron that had steamed to Alexandria for that purpose, but which desisted for fear of hitting the American craft.

The UN was unwittingly embroiled in the war through its Mixed Armistice Commission, on the scene to enforce the 1948 armistice. The commission's Gaza detachment, in accord with its assigned duties, continued to communicate to commission headquarters at Jerusalem in clear radio messages various Israeli military movements in its area until the Israelis, after an incident with the local mission head—a colonel of the US Marines—temporarily confiscated the transmitters, asserting that the messages helped the Egyptian Army.

There can be no doubt but that the Anglo-French invasion of the Suez area —and prior to the actual landing, the threat of it—was of some help to the Israelis. It is, however, doubtful that the outcome of the battle itself could have been radically changed, as the Egyptian side asserts. Considering the speed with which the battle developed, the Egyptians would not have had time to throw sufficient additional forces into the balance to tilt it in their favor. Nevertheless, the importance of the French and British air participation, which pinned down the overwhelmingly superior Egyptian Air Force, should not be underestimated.

Conclusions

Much already has been said in various publications on the performance of the Israeli forces, both as units and as individual combatants. It is fair to say that, as of spring 1957, they comprise perhaps the most effective fighting force in the entire Middle East, outside of the Turkish Army.

This does not mean that mistakes were not made or that everything ran like clockwork. As is to be expected in such a war of rapid movement, communications and logistics broke down at times. Several subordinate commanders showed a tendency to not inform their superiors of the situation in their sectors. And in many cases staff officers left what they considered distasteful nonfighting jobs—in search of "action." When Colonel Simchoni was shot down by Jordanian antiaircraft fire on 7 November he carried with him notes and observations summing up his first conclusions about the campaign. These notes were, of course, immediately forwarded to Egypt and published in part in President Nasser's own article in *Akher Saa*.[5] Dealing mainly with operations of Brigade Group 38, his notes include remarks that will be familiar to many a division commander: "*. . . no SOP's concerning operations . . . at 7th Armored, staff officers had not been seen at their assigned posts for some time. . . . Staff branches did not coordinate their orders . . . no real use was made of G2 information. . . .*

On the Egyptian side little new can be added. As also is pointed out by most sources, it is very likely that Egypt's problem lies in the long-range improvement of the basic standard of living of her people. The Egyptian private soldier is mostly a product of the country's *fellaheen* (farm laborer) class. In the words of

[5] The notes were shown photographically in their original Hebrew text. While one cannot, of course, be fully certain of their authenticity, the writer has been told that they are written in the correct Israeli military style.

General S. L. A. Marshall: "The *fellah* is illiterate, not interested in fighting, and so subject to privation that he is not really fighting material."

Thus the performance of the Egyptian Army in battle is best judged against the background of its previous performance in 1948-49. Israeli sources agree that in many cases the Egyptian Army of 1956 had improved greatly. Individual units in Abu Aweigila, Khan Yunis, and Sherm el Sheikh fulfilled their assignments even against great odds.

The dominant factors which contributed to the Israeli military success were imaginative leadership, better communications, and—in the later stages of the battle—air cover.

Lessons Reaffirmed

Certain lessons can be drawn from the blitz which should be of general usefulness to any army operating in the open desert:

The absolute necessity of adequate air cover is perhaps the most important lesson. Both Israeli and Egyptian columns suffered a heavy toll in destroyed vehicles and disorganized logistics whenever one of their convoys was caught in the open without an air umbrella.

The operation also proved (if such proof still was necessary) that the propeller-driven fighter bomber has seen its day, even in the "underdeveloped" Middle East. Twelve of the 20-odd planes lost by the Israelis were *Mustang* fighter bombers.

Once again it was proved dangerous, if not fatal, to mortgage operational freedom for static defense in desert warfare.

It is proper to be concerned about logistics, but such concern should not be permitted to slow to a crawl operations designed to capitalize on speed. This is particularly true when early link-up airborne operations are a part of the offense. It can be said for the Israeli High Command that it combined the necessary operational daring with sufficient logistical flexibility to achieve maximum effect from the speed and surprise of the thrust.

Over-all coordination was good in the Israeli Army; lacking in the Egyptian Army.

Little-known operations by the Israeli Navy deserve mention, such as the epic overland transport of five 30-ton *LCM's* via railroad and truck across the Negeb Desert from the Mediterranean to the Gulf of Aqaba and the 15,000-mile circumnavigation of Africa by two Israeli frigates which then sailed up the Red Sea and entered the Gulf of Aqaba from the outside exactly on A+5, thus providing Israel with a tiny "Red Sea Squadron" to support its claims for free navigation in the gulf.

On the Egyptian side lack of coordination resulted in the appearance of one lone destroyer off Haifa where, without other escort and without air cover, it became an easy prey of the Israelis.

Was It a Real Success?

All indications seem to point to the fact that Operation *Kadesh* was an Israeli success, the more so as Israel lost only 171 dead and 600 other casualties. But was it really one? Surely it destroyed a large part of Egypt's *immediate* war potential and disorganized two-and-a-half of Egypt's five divisions, but, as Israeli General Dayan himself pointed out, such were not the objectives of the war. The objective simply was to create a long-lasting deterrent effect upon Israel's Arabic neighbors until such time as a political settlement could be reached—an application of the Clausewitzian theme of the extension of national political policies by other means.

However, it seems possible that the Israelis have deliberately disregarded a legitimate military objective which was within their reach: Egyptian military manpower. Surely, without delay Egypt can replace the Soviet equipment she lost —in fact, she immediately took over the huge British military depots of the Suez

Canal Zone which assertedly contained equipment sufficient for at least 10 full divisions. But it is extremely doubtful that Egypt could have replaced the tank drivers, mechanics, artillerymen, radar, and other specialists which she trained at a great sacrifice to her economic development over the past two years. Thus the capture (the Israelis had captured 5,000 Egyptians as against a lone Israeli pilot who fell into Egyptian hands after his plane crashed) of most of Egypt's forces in the Sinai Peninsula would have dealt Egypt's further military buildup a serious blow, not to speak of its effect upon Egyptian morale.

As is, Israel has lost the political fruits of its victory at various conference tables, and its military fruits through what is perhaps a serious error of ultimate objective. US Army *Field Service Regulations*, citing Clausewitz, state: "The ultimate objective of all military operations is the destruction of the enemy's armed forces in battle," and again quoting Clausewitz, "in such dangerous things as war, the errors which proceed from a spirit of benevolence are the worst."

Brief List of Selected References

Hanson W. Baldwin, dispatches in the New York Times, between Oct and Dec 1956.

Merry and Serge Bromberger, Les Sécrets de l'Expédition d'Egypte [in French], Paris 1957: Editions des Quatre Fils Aymon.

Joan Comay, The Six Days of the Sinai Campaign [in English, French, and Hebrew], Tel Aviv: Israel Illustrated Book Publishing Co., 1957.

Leo Heiman, "Story of the Sinai Campaign," Commentary [monthly], New York: Jan 1957.

Paul Henissart, "How the Israelis Blitzed Nasser's Army," Saturday Evening Post, Philadelphia: 9 Feb 1957.

Robert Henriques, 100 Hours to Suez, New York: The Viking Press, 1957.

Rudolf H. J. Holzhausen, "Die deutsch-türkischen Operationen gegen den Suez-Kanal und im Sinai-Gebiet während des Ersten Weltkrieges," Wehrwissenschaftliche Rundschau [in German], Darmstadt, West Germany: Mar 1957.

S. L. A. Marshall, "The 100-Hour War," Army, Washington: Mar 1957.

President Gamal Abdel Nasser, "The Story of Israel" [in Arabic], Akher Saa, Cairo: 5 Dec 1956.

Edouard Sablier, "Après la Campagne du Sinai," Le Monde [weekly], Paris: 30 Jan 1957.

Men make their homes on land, establish their governments on land, measure their wealth by land, and on the land stand and fight. It is the land which sustains man and his warmaking potential. And it is only the ground force which can wrest this land from the hand of the enemy, hold it, control the land and its people, govern the people until they learn to live as free men and govern themselves. Defeat of an enemy, as you know, is not an end in itself, but only a means to an end. Therefore, a victory must be consolidated. Domination over land and an enemy people occupying it must be gained and maintained, and only ground forces have the capability to take and hold and control the land.

Obviously, none of the Army's tasks can be carried out effectively without the full support of the naval and air components of the defense team. Control of the sea and air is essential to the success of any latter-day military ventures. But in the final analysis, the final act in the progress of war is the location of Army units on the ground of the enemy.

Under Secretary of the Army Charles C. Finucane

The Military Function and the Soldier

Colonel Oliver K. Marshall, *Artillery*
Headquarters, Continental Air Defense Command

THE War Department, created by the Congress in 1789, represented the new Republic's needs for a Federal Government agency which could exercise executive direction of the Nation's defense forces. The forces at its command were small; the militia of the several states was felt to be outside the direct control of the War Department, and the fact of geographical isolation was all-persuasive in the establishment of a national defense policy.

While the states, in varying degrees, were jealous of their control of the state forces which they raised, the views of Washington, Hamilton, and Knox were that every male citizen, notwithstanding his status of "state citizen," owed military service to the National, or Federal Government. There was much difference of opinion as to where the *primary* obligation lay, but the prevailing view (and historical result) was that the Federal service was held to be primary. Hence the War Department began functioning on the basic premise that it could assume control of the armed forces of the country as a whole whenever the occasion of national security demanded.

As the country expanded and Federal Government grew in size and responsibility, the War Department undertook many functions of an executive interest which were assigned to it as the only agency of government available and competent to discharge them. Although these functions were not warmaking functions, the young Nation needed an effective agency for pioneering, exploration, and natural resources engineering for which only the War Department was equipped.

Many services of an invaluable nature were performed, and these achievements are rightly counted in the heritage of the Army. In turn, these varied assignments contributed to the training, growth, and prestige of the Army against which there were arraigned no threatening armies. As executive government expanded, many of these functions were reassigned to other agencies, but some remained with the War Department and are discharged to this day by the Department of the Army.

Expanded Until 1947

Following the Spanish-American War, the creation of an Army General Staff provided the minimum essential foundation for the expansion which attended World War I. In that war the War Department's function of directing the Nation's defense effort was projected into broader fields than ever imagined by its creators. World War II simply extended the process on a global scale.

Not until 1947, with the "unification" act, did the War Department experience a decrease in responsibility for the national defense. The Army Air Corps became the Air Force, under a separate ex-

The Army should revert to its role of concentrating on preparation for land operations and relegate as many noncombat functions as it can to the other departments of Government and civilian agencies

ecutive agent, and the National Military Establishment was created to discharge the over-all responsibility for national defense. The War Department became the Department of the Army.

The significant trend of these latter events was obscured to a considerable degree by the controversies over the exact status of the Air Force and the degree of autonomy left to the Navy and Marines. It would seem, however, that while war experience had proved the need for unification of the three services, the really significant fact proved was that the manifold functions of national defense had outgrown the ability and authority of the War Department to discharge them. It was essentially a matter of elevating the War Department to its historic role, or tailoring it to the narrow function which had been dominant in its beginning—responsibility for the ground armies of the Nation.

The course chosen was the only one possible, for a number of reasons, but it could have been easily foretold from the experience of World War I. During that war the Nation was forced to create "superagencies" to cope with the sheer size and breadth of effort required by a modern industrial Nation at war. World War II, and the years of mobilization preceding actual entry, saw the full development of the "superagency" device of executive government for war.

War Department Saw Problem

The War Department found itself projected to some degree in almost all these agencies, even directing the effort of some, but the evidence was clear at the conclusion: the Nation-at-war was no longer the exclusive problem of the department which had been conceived originally as responsible for the defense of the Nation primarily in terms of the mobilization, training, and employment of land armies.

Whatever motives may have been ascribed to the Army by the opponents of unification, the fact stands that the leaders who had carried the primary responsibility for defense were those same War Department officers who saw most clearly that the department could no longer best serve the Nation in its historic form.

After defense reorganization the Department of the Army retained the nucleus of the vast service support organizations which it had created throughout the years as the War Department. Recognizing the functional identity of the ground forces within itself, as it had done in World War II, the reorganized Department of the Army retained a separate headquarters—the Army Field Forces, now Continental Army Command. The Service Forces of the war were dissolved into the various staff agencies and the Technical Services. This situation, with no further analysis, would appear to result in a gross overbalance within the Department of Army: the War Department functional structure for service support and administrative duties far exceeding the requirements of the resulting "ground armies department" with its narrowed mission.

The foregoing is a highly condensed and oversimplified statement of what is believed to be a significant problem: *To what extent has the Department of the Army retained (or been left responsible for) functions which no longer pertain to its primary mission, in the era of the Department of Defense and the "superagencies for war"?*

The Traditional Army

In seeking to understand the true function of the Department of the Army, it is important to understand what constitutes an *army*, and how it comes into being in the society which produces and uses it. In *The Armed Horde*, Hoffman Nickerson says:

Thus nothing is more characteristic of any society than its military system and

its armed struggles. There you find reflected its industrial technique, power of organization, and moral driving forces, fused into a single effort.

Necessary Luxuries

In the broadest sense, and it is true of most governmental agencies, an army is an extraeconomic adjunct to society: in an economic sense it does not pay its way since it produces nothing. A large standing army becomes a political liability as soon as its cost exceeds the economic margin which the society is able to produce, over and above its ordinary needs as an organization. This is simply saying that poor nations cannot afford large armies at all, and wealthy nations can and *will to the extent that the incentive for security is strong enough to make them politically expedient.*

Armies pay back to society in terms of the security they provide, and, short of war, that security is a difficult commodity to measure. The degree to which it is evaluated as being necessary is a political function of state; the measure of its success in providing that security is a function of state; and, the determination of the ultimate goal of that security, once achieved, is a function of state. The army of a nation, then, is simply the means by which the function of state may be implemented. This is an oversimplified and trite philosophy often repeated and fully accepted as a modern maxim of political science. However, it is emphasized here because it points up sharply the background against which the American Army has been developed as an expression of the political will of the American society.

This political will of the United States has been influenced keenly by two factors:

1. Geographical isolation from competing land powers.

2. Extrasensitivity to the economic and social nonproductivity of armies.

The second of these two factors has found expression in the primary reliance upon "militia" type forces from the beginning to the present day. Casting it in a little different language, the society of the Nation has never yet evaluated its security as being in enough danger to warrant the expense and social contribution necessary to maintaining a large Regular Army.

Isolation Meant Economy

The first of the above factors largely made possible the second. Geographical isolation first prompted Baron Friedrich von Steuben to recommend a force of only 4,000 men as a standing army since "no nation was in a position to attack." Our national military policy has been conditioned consistently by this isolation, and only in the last two decades has there arisen the danger of it losing any significance. The Navy has provided the measure of security necessary to ensure ocean isolation; airpower, it seems, can provide the security for air isolation. Scientific advances have created weapons which intrigue the policymakers with a means of maintaining security based on isolation—by retaliatory force through the air and by air defense—as a preferential means to the maintenance and deployment of large armies. In considering how to buy

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Colonel Oliver K. Marshall was graduated from The Citadel in 1938. He served in Europe with the 62d Antiaircraft Regiment and 3d Infantry Division during World War II. Following his graduation from the Regular Course of the USA CGSC in 1947, he was assigned to the faculty of the College. From 1950 to 1954 he served in Germany with the 1st Infantry Division where he commanded the 48th AAA AW Battalion (SP), the 33d Field Artillery Battalion, and was S3, 1st Division Artillery. He attended the Army War College in 1954-55 and subsequently became commander of the 10th AAA Group in Korea. Upon his return to the states in December 1956 he was assigned to the Plans Analysis Directorate, Continental Air Defense Command Headquarters.

security, then, the isolation factor still is dominant, as can be realized if one imagines the difference in thinking that would result if a Russian Army were deployed along the Canadian border instead of the east German boundary.

"Militiaism" has continued to fill the Nation's concept of its Army needs for security. The National Guard and the Organized Reserves provide a socially acceptable form of armies which heretofore could be mobilized in time to discharge their security role. The Army was conceived, endured, and exists today on the fundamental premise that Army type security can be procured in time for *fighting* a war, and that this is the most economical way of doing so.

The War Department, in both World Wars I and II, found itself not organized initially to conduct a war with the large conscript-militia armies it was to build and employ. Instead of a fully active and operational department, it had shrunk in the interim years of peace to fit the needs of the small Regular Army it controlled. It continued to be charged with certain historical functions outside the realm of national defense; it concerned itself with the administrative and operational problems of the service bureaus, and it attempted to develop the best possible machinery for the mobilization which was to be the national policy, devoting much time to the creation of effective Reserve forces. At one time President Wilson even forbade the Army to indulge in war planning of an operational nature.

Changing Attitudes

The major reforms of staff organization, effected by Elihu Root after the Spanish-American War, ensured the degree of professional staff competence necessary to mobilize and employ the armies to a successful conclusion in World Wars I and II. However, these same reforms (which met with bitter opposition from the watchful Congress and the bureaus) never reached deeply into the social thinking of American society as to what its Army should be. Isolation and pacifism confined the Root reforms to the small professional army and prevented the growth of corresponding reform in the social-military thinking of the Nation.

The air threat to conventional isolation, and the realization of the folly of pacifism as such, has brought the first significant changes in the attitude of Americans toward the necessity for professional military forces—an attitude which has been transformed into terms of "strategic" aircraft and nuclear weapons. *The social attitude toward ground armies has not undergone a fundamental change.*

Nonmilitary Functions

From its beginning the War Department was given tasks which, at the time, it could best perform because of its discipline, training, engineering skill, and ability to exert police type force if necessary. Tasks of frontier exploration, protection of settlements in the West, and continuance of law and order in the vast border areas, if not actual war operations, at least were proper military functions of the Army for that time and situation. Many other assigned functions, however, were by no interpretation of the word *military*, and their assignment to the War Department was a matter of commonsense expediency.

The growth of Federal Government saw a gradual shift of certain War Department duties to other executive agencies which came into being and were more efficiently equipped to discharge them. In 1889, for example, the Chief Signal Officer sought and gained the transfer of the Weather Bureau from his department to the Department of Agriculture. This created, as President Harrison expressed it to Congress, a proper division between the purely civil organization on one hand and the purely military staff corps on the

other. The Chief Signal Officer had stated that his corps was beginning to deteriorate on the military side by an off-balance of effort.

Almost continual planning and programming for reorganization of executive department duties have proceeded to this day. Many such plans include proposals to clarify the military functions of the War Department as contrasted to its more civil type missions and functions. The Honorable Henry L. Stimson, Secretary of War, noted:

The Secretary of War in 1911 was also in effect the Secretary of the Insular Possessions and to a large degree the Secretary of Public Works.

Among varied nonmilitary Army functions preceding the First World War were responsibility for the Panama Canal (which is retained to this day), the administration of the Philippines and Puerto Rico, and all responsibilities for the development of rivers, waterways, and harbors. In 1924 President Calvin Coolidge in his message to the Congress on the Report of the Joint Committee on Reorganization listed as one of his outstanding recommendations:

The transfer of all nonmilitary functions from the War and Navy Departments to the civilian departments—chiefly Interior and Commerce.

This recommendation apparently grew out of an identical one arrived at in 1920 by a separate study group called the National Budget Committee, which pointed to the same situation described by Mr. Stimson (above), and proposed in detail the functions which should be transferred. It was this same study which contained the proposal that the War Department be supplanted by a single department termed the *Department of National Defense*, and under that agency there be created three subdepartments, one each for Army, Navy, and National Resources.

The exact extent and nature of the nonmilitary activities of the Army is a difficult field to survey, for, apart from the natural reluctance to part from activities, the very real *obligation* to provide service is present in any responsible official upon whom the duty devolves. It would not be too difficult to identify those major functions which are vested solely in one department or bureau as a result of historical precedence—such as the functions of rivers and harbors. The real difficulty arises in the identification of military versus nonmilitary in the functional activities which are common to many services of the Army and which indicate a *degree* of separation, rather than complete severance. Such is the case of the industrial planning and procurement of the Technical Services of the Army. It is fundamental to realize that *economy of operation*, which was a principal criterion of the Hoover Commission, cannot be used as the measure of military interest and control.

In considering any particular function, what is necessary to a determination of what is military and what is not is a definition of *what is essential to discharging the primary mission of the Army*. In other words, the Army's control of a function could be said to be nonessential at a point where direct, uniformed control ceases to be essential to the conduct of ground operations of the Army. A peacetime definition might be arrived at with considerable difficulty, but a delineation of the Army's refined *military* functions in modern total war would be the most difficult organizational problem.

While long years of peace, accompanied by generally prosperous conditions, are not likely to create any friction between military and civil interests, the prospect of society aligned in the common effort of a future war may very well find friction with the civilian community to be a very real problem to the Army. Every field of common endeavor between the uni-

formed Army and the mobilized civilian society will be suspect in terms of unnecessary *militarism*.

World War II, and the succeeding years of the cold war, have seen an unprecedented degree of military impact on and participation in our society. National defense interests are impinging more and more upon every facet of society: the research and development field, the educational field, the industrial field, and the social structure itself (through the draft and veterans' educational and welfare programs). To the degree that this trend continues, or becomes intensified in an even greater atmosphere of preparedness, the military leader is in a position of assuming in the public eye the responsibility for the social regimentation that evolves.

The Army's interest in this condition of social change is considerable, since opposition arising out of it can seriously obstruct the very essence of the Army's mission: preparing for and conducting the ground armies of the Nation against the ground armies of the enemy. The Army's interest in the increased organization of the Nation for defense should be primarily in those facets of mobilization which directly benefit the Army mission. Its solemn obligation is that the segment of society mobilized for its mission be closely confined to the specialized field of combatant arms. The dangers of doing otherwise are serious, both in increasing public antagonism to the Army and in creating too wide a span of control and interests to allow for efficiency.

The Logistical War

The development of American social thinking with regard to her armies and military policy was paralleled by the great social change of modern history: the industrial revolution. For Americans this came to be a more pronounced influence on military thinking than for any other nation. The geographical isolation of the country required that military forces, and even the bases for these military forces, be transported great distances if they were to be employed against the enemy. In addition, the great industrial capability of the Nation allowed it to play the part of armorer to its allies, and to multiply every mechanical advantage of war to an unprecedented degree. If American social thinking did not fully appreciate pure military matters, it *did* understand and appreciate those matters when translated into terms of immense industrial production. Modern warfare had become, strategy-wise, a logistical war, and those logistics were national in scope.

The full impact of the logistical war was felt by the War Department in World War I, where initially all was confusion in the attempt of the separate bureaus to rush support to the ports. As a result, both in the department and in the American Expeditionary Forces, a Services of Supply was created to solve the problem of coordinated support which Mr. Root had tried to solve before. The War Department General Staff was reorganized to effect staff direction of the service support effort. It was a case of reorganization or failure, and General Peyton C. March was given the task of creating order out of chaos which he did with a ruthlessness which left little opportunity for bureau prejudices and separate interests. In this he was a forerunner of the firm direction of Service Forces by General Brehon B. Somervell in World War II. Neither experience "took" in the sense of permanent change in the War Department as to the separate status of its service bureaus.

World War I reorganization did not materialize, although it was recommended. The magnitude of the Army's reliance on modern logistics had been proved, but the reforms were not forthcoming. World War II was a repetition of the same experience, on a grander scale for a longer period of time, but again the lesson learned was not applied. Only recently, with the

formation of the Office of the Deputy Chief of Staff for Logistics, was the obvious applied to the peacetime structure of the General Staff.

If modern war was a logistical war from the Army viewpoint, it was a much greater logistical war from the national viewpoint. The extradepartmental nature of the tasks imposed was manifestly beyond the scope of a single executive department, even if the defense of the country was the primary responsibility of that department. It was not the sheer size of the task, but the nonmilitary nature of the great mobilization base which projected the problem out of the sphere of the War Department; nor was it a matter of simply coordinating the military departments —the Army and the Navy. It was a matter of executive department organization of the logistics of the Nation.

The lesson of national logistics was learned and applied in part. The National Defense Act of 1947, and the subsequent amendments and extensions of that act, created the Department of Defense, the Office of Defense Mobilization (previously the Munitions Board), and other "superagencies," not all in the logistics field. The coordinating and policy-making role of the Secretary of Defense now extends into every national facet of war planning and control which had previously been the prerogative of the War Department.

The Soldier in the Army

Earlier it was pointed out that the military policy of the Nation was conditioned consistently by the geographical isolation of the country, and as an economic and social result "the militia concept" had been maintained as the basis for army type forces. Next discussed, as a principal factor in the Nation's policy toward its Army, was the industrial revolution and its impact on the total mechanization of war. In this section will be developed the impact of a second great social change in the conduct of warfare which has complemented the American concept of "militiaism" and the logistical war: the *mass army*.

American military thinking lived apart from this concept until the Civil War forced both sides to resort to conscription in order to pursue to an end the war they could not negotiate into peace. The mass army concept received its early development with the Revolutionary Armies of France and was emphasized as a new national concept of war by Napoleon. The revolutionary zeal of "liberty, equality, and fraternity" brought with it the feeling of obligation on the part of every citizen to participate in the wars of his state—wars that were beginning to be social crusades. Small professional armies which fought the limited wars of kings and state were lost forever, apparently, in the overwhelming success of great numbers of conscripted soldiers, ably led and inspired with an awareness that warfare was their concern in the welfare of state.

World War I saw conscription implemented in the United States from the start, and with little public opposition which was aroused by conscription during the Civil War. By World War II the principle of conscription to raise mass armies was an accepted doctrine of American military policy and social thinking. The magnitude of war effort on a national scale extended conscription to the civilian industry as well as military, but this was resisted successfully during World War II and is not yet an accepted principle.

Conscription and Risk

Many factors of equity to state and individual, control of mobilization, and expediency of war combine to make conscription the accepted social order of war which it is today.

Fundamental to the issue is the principle of equity of risk. Onerous as straight

military duty might be, the essence of military service in war is that of risk, and the principle has been that it was the duty of democratic government to equalize that risk among all those physically able to serve. Obviously, not all shared equally in that risk, once they were conscripted, but at least the vulnerability to risk was implicit in wearing the uniform.

A corollary to military risk was the logical theory of compensation for risk endured, and in the American tradition this became actually a compensation for the *vulnerability* to risk. If one single motive can be isolated out of all the reasoning and pressure brought to bear on this problem, it would seem to be simply that while citizenship was synonymous with an obligation to serve in a risk capacity, the return obligation of the state was to provide compensation over and above the intangible benefits accruing from having won the war. In other words, the citizen-soldier was to be placed in a status of "special citizen" once his service was completed. This has had little to do with the ancient philosophy of the pension to the professional soldier, or the manifest obligation to compensate for those killed or provide care for the wounded. It is almost purely an American social phenomenon of equating in material wealth between the civilian who did not serve and the civilian who did serve.

It is not the purpose here to examine the tremendous social influence of 21 million "veterans," nor of the economic effects of social compensation to them in the form of educational grants, housing, job preference, and bonuses. The Nation has undergone such a profound evolution of social compensation in all fields that it is only difficult to separate the significance of the veterans' program. The purpose here is to try to reconcile the historical —or social—definition of "veteran" with the composition of the Army in a future war.

Who Will Be a "Veteran"?

In the sense of social equity in the eyes of society, in a future war who will qualify as a "veteran"? If a finer definition of that term can be stated, does it have any significance in terms of those organizations and personnel who should compose the Army of the future?

The definition of the jobs within the Army by degree of risk involved never was stated successfully in previous wars. Flying pay, hazardous duty pay, death benefits, and relief from income tax were, each in its scope, attempts to resolve the problem of extra risk. They were partial and surface solutions to the fundamental question of who was a *soldier* and who was simply a *civilian in uniform.*

The Army never attempted to differentiate between its combat and noncombat jobs *insofar as using such classification as a criterion as to who should or should not be in uniform.* (Indeed, it did the reverse by bringing females into organized WAC units when it was manifest that there was no combat vulnerability involved.)

Soldier's View of Risk

In *The American Soldier,* Samuel A. Stouffer provides an exhaustive study of the individual soldier's own attitude toward, among other things, his relative position of risk within the Army. Conscripted soldiers felt keenly their position of added risk when in the infantry, and regarded that branch as one to be avoided. In reality, there was what might be termed a second conscription within the Army itself to provide the soldiers who would actually fight and endure risk.

Another strong factor in this lack of interest in the straight combat job with the infantry was the absence of opportunity for that branch to provide application and training in the common civilian skills such as the soldier could find in the Technical Services and even the armor and artillery.

Victory Comes First

The Army never succeeded in glamorizing the infantry job, as it had for the paratroops, or as had the Marines or the Air Force for its flying personnel. The meaning of the old World War I refrain: "Mother, take down your service flag, your son's in the SOS," generally was realized by the soldiers themselves, even if civilian elements of society refrained from any open criticism of the inequality of risk. The average citizen-soldier was not openly critical, as a group, of such inequality, for he had too many other interests and generally accepted his fate or good fortune as one of the imponderables of the gigantic war effort. The civilian—in a society still geographically isolated from the theaters of war, duly impressed with the hazards and hardships of Army life in general, and so acutely aware of the losses that *were* being suffered in the service—could scarcely be expected to criticize what was an organizational problem of the Army. The Army was not unaware of the problems in attempting to equalize risk. However, other demands, such as stability in key skills of some, and the simple necessity of getting *numbers* of able-bodied men into the fighting divisions, prevented the Army from focusing close attention to the problem of risk equity alone and caused it to view all soldiers alike as to their contribution to the Nation's defense.

If there is an open question of risk equality within the Army itself, what of the equality of risk between soldier and civilian in the future war? If a holocaust of nuclear destruction is to be wrought upon civilian populations as an act of warfare, what is the risk obligation of the Government to its citizens versus its noncombatant soldiers? If we assume a condition of minimum essential control of civilian life in the next war, somewhat the same pattern of life as existed in this country during World War II, we will at least realize a form of regimentation that is fully oriented to the war effort.

If we assume, however, that we will be forced to go to a form of national service to prosecute the war, and if we take into consideration the civil defense function of civilian groups and the controls necessary to prevent complete evacuation of production centers in the interest of maintaining support, we begin to develop a degree of regimentation which renders obscure the distinctive regimentation of the noncombat soldier in the Army. Whatever the degree of control over the civilian—the civil defense worker, the war production factory worker, or even the passive contributor to the war effort (as will be most rationed civilians)—the individual who suffers death or injury from armed enemy action must be counted a war loss. Civilian casualties have been heavy in other wars, but the problem will face modern Americans for the first time in the next war, and then in terms of the most destructive of all weapons. Under such conditions it is questionable that the Nation can continue to justify its beneficent and generous policy of compensation for simple uniform service, per se.

Unquestionably, the Army must have control of certain uniformed services of noncombat personnel to ensure the success of its combat personnel. However, if under the conditions of common civilian risk to war loss, a realignment of our social thinking of the status of all veterans could be achieved, then perhaps we might have the means of making a better distinction, functionally at least, as to which activities are common to the entire defense effort and which activities are peculiar to the role of the Army. Hans Speier, in considering the question of the distinction of the military role, has said:

If the function *of military organizations rather than the* attitudes *of civilians toward military practice are taken as the point of departure, it is evidently*

the expectation and the demand to destroy and to kill as well as the greater risk of suffering and death by violence which distinguish the soldier from the civilian. This point, rather than authoritarianism, inequality, and traditionalism, would seem to deserve the main attention of the analyst. Military life is more serious than civilian life because soldiers are required to die for the community as a whole and to kill in the interest of its preservation. Older writings never fail to focus on this point.

Summary

Thus far an attempt has been made to project historical patterns of growth into the immediate and future organizational structure of the Army. Out of all the broad discussion two principal thoughts emerge:

1. The Department of the Army has not yet adjusted to the refined mission of an executive agency for ground armies.

2. The composition of the Army, both as to certain units of service nature and to individuals, is not functionally directed toward its primary mission to the degree necessary for future warfare.

Functions of the Army

There can be no fine line of distinction drawn between the *exact* degree of control which the Army must have to discharge its mission and that which can be more efficiently placed in the hands of a supporting agency. In many functions, however, the present interest of the Department of the Army is extended beyond its primary mission, either as a result of historical lineage or as a result of the reorganization which created the Department of Defense. The result (and intent) of the latter was to leave the Department of the Army functional in areas of broad national service support which it and its bureaus had developed as the War Department.

The purpose of unification was to develop single-service support and cross servicing between subordinate departments of the Department of Defense. Had the purpose of unification been carried to its most logical conclusion there should have been created a fourth subdepartment—a Department of National Service—to assume from the War Department its manifold tasks in the national defense structure. Base and industrial logistics of a national scope are not properly within the narrowed sphere of the Department of the Army, and in the present situation create a dichotomy of effort which is injurious to the primary mission of the Department: the creation and operation of ground armies.

Composition of the Army

Accepted concepts of future total warfare, with the element of isolation removed from this country and the necessity for total national effort, indicate a change in the traditional thinking as to what forces should comprise the Army proper. While the mass army will continue to be the accepted pattern of war in its final phases, the higher degree of proficiency in technical training for combat, the unprecedented need for immediate striking forces, and the evident requirement for Army forces which can immediately engage in and endure the severity of modern combat duty indicate that a mobilization base consisting of militia type forces will not be adequate in the national defense.

American society can no longer buy security—or survival—with the less expensive Reserve unit mobilization base. To offset superior manpower with superior firepower is a sound policy only to the extent that trained forces are available immediately to implement that firepower.

On the other hand, the static defense of the continental United States, including the civil defense function in all its parts, the passive defense measures, and manning the emplaced antiaircraft weapons, is a vital mission to national security.

The traditional American concept of militia forces for defense appears to meet this defense requirement much better than it does the future offensive field army role.

Unless the Army is either to immobilize itself or devote only token forces to these tasks, the one remaining source of organized ready strength for the defense mission is in the National Guard and Organized Reserve. It would appear proper, in the over-all security mission, that the mobilization capability of Reserve units be concentrated on civil defense, including antiaircraft, as the primary mission of those units. An extension of this reasoning would place these forces under separate Department of Defense command, relieving the Department of the Army of the responsibility for static defense in all its phases. However, such a drastic shift in national defense policy is not believed feasible or even desirable at this time.

The creation of Department of Defense Support Services would assist materially in clarifying the composition of the Army. However, within the structure of support activities not removed from its immediate concern the Army should employ complete civilian or quasi-military units to provide such services as the operation of post and camp facilities, entertainment and recreational activities, and educational programs. Within itself the Army should assure that all its uniformed forces are devoted solely to the combat and direct combat support role.

Finally, above specific considerations, the Army should strive to attain and maintain its identity with the combat mission, relegating as many noncombat functions of a national or cross-service nature as it can to other departments of Government or civilian agencies. It should avoid, to the maximum extent possible, implication in noncombatant, national regimentation for war.

In this age of atomic and thermonuclear weapons and supersonic speed, it is imperative that all components of the Army attain and maintain the highest possible state of training readiness. We are not dealing today with the circumstances of yesterday. The urgent necessity, in the event of war, to employ post M-Day forces almost immediately in the field of combat precludes the rather leisurely buildup of military organizations which has been practicable in the past. Specifically, we foresee that a number of Reserve component divisions and their supporting units will be required overseas as rapidly as transportation can be provided. They must be ready for movement from the United States—and combat commitment—within a matter of weeks.

Secretary of the Army Wilber M. Brucker

Realistic Decision Making At Division Level

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THE mental process of making decisions is one which is so basic, so universal, that no normal human being who survives beyond the age of earliest comprehension and reasoning has failed to participate in the operation. Willing or not, it is simply something we *must* do. Even members of the animal kingdom are not exempt from the continually recurring requirement to do one thing as opposed to another. Some people shy completely away from decision making and end up in mental hospitals. Others worry and fret to such an extent about conflicting alternatives and frightening implications that they develop ulcers. Still other individuals make an art of the process; they revel in its potential intricacies; they live off the fat of the land until—even as the dice may roll—one faulty decision plunges them into obscurity or oblivion.

Decision making is a serious business in the military services. We realize that it should not be approached as an art because we have too few true artists in our profession. But at the same time, despite fantastic advancements in modern research, it is most improbable that basic decision making can ever be reduced to a mathematical or exact science. Our approach, then, must be somewhere between the two extremes of inspirational dreaming and mechanical rote.

Joint Chiefs of Staff

One of the basic tools used to guide and assist officers in decision making or problem solving—call it what you will—is the Joint Chiefs of Staff (JCS) approved form of the Commander's Estimate of the Situation (see page 37). This form is quite appropriately presented as the first of the appendices of Field Manual 101-5, *Staff Officers' Field Manual, Staff Organization and Procedure.* It is—or should be—as familiar to every officer in the Army as his serial number. At the United States Army Command and General Staff College a substantial portion of curriculum time is devoted to explaining, discussing, and making practical application of the estimate.

However, to most instructors at Fort Leavenworth who teach various aspects of this subject it soon becomes apparent that it is an area in which considerable student confusion and resistance develop. This is not to infer that the College fails in its instructional mission in regard to the estimate. Certainly, when the student is graduated he has an intimate familiarity with all the inner workings of the approved method of reasoning out a military problem. It would be safe to bet that an overwhelming majority of the students could be awakened in the middle of the night after completing four or five months of the 10-month course and, while half

A division commander's mental estimate of the situation should be a natural thought process and not the result of blind obedience to a form developed to assist in the preparation of a detailed written estimate

asleep, go through the steps of the estimate form on almost any problem-solving situation.

Nevertheless, too many students and instructors alike have inner doubts about the realistic, practical *application of certain facets of our handling of the estimate in certain situations.*

What, if any, is this flaw in such a basic tool as the problem-solving technique upon which all else depends? First, let us limit the scope of the problem to that of the *Commander's Estimate of the Situation.* Numerous other estimates, off-shoots of the basic form, may be subjected to even more criticism, but these matters are outside the scope of this discussion.

Mental Process Different

Above all, to ensure student understanding it is necessary to place the estimate in proper perspective as to the level at which it will be applied. At Fort Leavenworth most of the tactical instruction is at the division level. It is stressed also that at the division level a commander seldom makes a *written* estimate, but goes through substantially the same process without committing his thoughts to paper —at least at that time. This probably is the real crux of the problem. There are fundamental differences in the way most men approach a problem if their solution is limited to mental appraisal as opposed to written study.

Hand a man a pencil and piece of paper and ask him to multiply 249 by 6. He will quickly jot down the larger number, place the 6 under it, and multiply the 6, in turn, by each of the digits above it, carrying the tens over from one multiplication to another, until he arrives at the answer. But if you ask him to do the same problem without the pencil and paper, the chances are his approach will be quite different, probably something like this: "249 lacks one of being 250. Think of 25. Six times 25 is 150. Add the zero and it's 1500. Substract one 6, and the answer is 1494." Is the latter method suitable for writing out on paper? Hardly. But could most of us use the first method accurately in a mental process? It is doubtful, depending upon the individual, but certainly the latter procedure is easier for most.

We tend to teach the estimate in a form which is entirely adequate for a written presentation but basically impractical for purely mental solution. Student frustration develops when a clear delineation is not made, particularly since the bulk of his applicatory exercises involve the division, where—realistically—mental gymnastics are required.

Analyzing Is the Key

How and where should a delineation between a written and mental estimate be made? The first point to consider is: "where in the estimate is real analyzing or reasoning required?" In all of the paragraphs prescribed in the JCS form? No, paragraph 5, **Decision**, is simply a concise statement of the conclusions which have resulted logically from following through the preceding paragraphs. Also, subparagraph 2a, which carries the rather imposing title, *Considerations affecting the possible courses of action*, consists essentially of "facts" which generally are

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Headquarters
Place
Date and time

COMMANDER'S ESTIMATE OF THE SITUATION

Map or chart references:

1. MISSION.

2. THE SITUATION AND COURSES OF ACTION.

   a. *Considerations affecting the possible courses of action.* Determine and analyze those factors which will influence your choice of a course of action as well as those which affect the capabilities of the enemy to act adversely. Consider such of the following and other factors as are involved:

      (1) Characteristics of the area of operations including terrain, hydrography, weather, communications. . . .

      (2) Relative combat power including enemy and friendly strength, composition, disposition, recent and present significant activities . . . logistics, morale, atomic weapons, CBR weapons, time, and reinforcements.

   b. *Enemy capabilities.* Note all courses of action of which the enemy is physically capable and which, if adopted, will affect the accomplishment of the mission and the relative probability of adoption, if justified.

   c. *Own courses of action.* Note all practicable courses of action open to you, which, if successful, will accomplish your mission.

3. ANALYSIS OF OPPOSING COURSES OF ACTION. Determine the probable effect of each enemy capability on the success of each of your own courses of action.

4. COMPARISON OF OWN COURSES OF ACTION. Weigh the advantages and disadvantages of each of your own courses of action in the light of the governing factors of the situation and decide which course of action promises to be the most successful in accomplishing your mission.

5. DECISION.

/s/_____
Commander

Pertinent portions of the Commander's Estimate of the Situation as presented in FM 101-5.

available to the commander, either in written form or as a matter of common knowledge after having been built up in a continuing situation. Subparagraph 2b, *Enemy capabilities*, contains information which normally is provided on a continuing basis by the G2. In any case, the concept and method of handling paragraph 5 and subparagraphs 2a and 2b generally are understood and accepted without controversy. This leaves paragraph 1, Mission; subparagraph 2c, *Own courses of action;* paragraph 3, Analysis of Opposing Courses of Action; and paragraph 4, Comparison of Own Courses of Action.

Although many inexperienced students learn with some surprise that paragraph 1, or *step one in the reasoning process*, constitutes much more than a simple statement of the mission and must be analyzed carefully for deduced tasks, the idea is accepted as reasonable and proper and causes little or no difficulty.

The Danger Area

Subparagraph 2c constitutes a potential danger area of student confusion and frustration. In discussing this subparagraph, FM 101-5 (paragraph 103b(4)) states:

> *. . . the commander visualizes all reasonable and practicable courses of action which, if successful, will accomplish his mission. He then eliminates from further consideration those courses of action which are obviously inferior to the others being considered. . . .*

The danger lies in the overemphasizing or making a too literal interpretation of the language of the field manual. If a feasibility test must be applied at this point, it is almost tantamount to making a premature estimate within the broad framework of the over-all estimate! If such an idea is permitted to lodge in the student's mind, his normal reaction may be one of consternation and disbelief.

One of the reasons sometimes advanced for the elimination of some courses of action at this point is that it will help to reduce the number of analyses that must be performed in paragraph 3, and will aid in preventing the estimate from being cluttered or too cumbersome. Actually, there is no need for a feasibility test in the mental listing of own courses of action. Any elimination at this stage must be spontaneous, or at least must come quite naturally without any muddying of the water. *If a course of action is obviously impractical, it would be eliminated automatically from the estimator's mind at whatever time such a thought came to the surface.* Under the procedure proposed below, if an unsatisfactory course of action should be considered momentarily in the step visualized as subparagraph 2c, its impracticality certainly would become apparent in the latter analysis, and it would be dropped quite naturally without tying the estimator's mind into a Gordian knot in the process.

So much for subparagraph 2c. The solution: *deemphasize and do not make a federal case of the elimination of courses of action at this point; above all, avoid any consideration of a feasibility test. The subparagraph is simply a listing or mental gathering of what appear to be possible own courses of action prior to their analysis in the next step.*

Consolidate Thoughts

It is in paragraphs 3 and 4 that the major share of trouble develops. The two paragraphs should be considered together since separation of the mental processes involved into tight, tidy, individual paragraphs in the prescribed form is the root and substance of the problem. FM 101-5 states in essence that in paragraph 3 of the estimate a "war-gaming" process occurs in which each of our own courses of action is visualized as being opposed, in turn, by each of the enemy capabilities.

It states, also, that the "governing factors" begin to "emerge" in paragraph 3 for use later in paragraph 4, and, of course, that it is only in paragraph 4 that we start sorting out all our carefully amassed knowledge in the process of making actual *comparisons.*

Undoubtedly, this is an extremely orderly and effective way to *present* an estimate that may already have been made surreptitiously by other means. Similarly, the system could be used without too much difficulty in working out all the ramifications of a tactical problem on paper in much the same manner as one performs the operations necessary to the solution of a problem in integral or differential calculus. But to presume that a normal or above average Army officer who does not possess some peculiar mental quirk or who is not blessed with more than his fair share of brains, *mentally* can perform a thorough, reasonably rapid, and sound analysis and solution of a problem in such a fashion is, at best, unrealistic. Classroom experience has shown that this approach to mental problem solving is open to serious question.

Combine Analysis, Comparison

It is easy to say with forceful righteousness how something should *not* be done; fortunately, in this instance, it is also fairly easy to propose a straightforward solution. The key, already inferred, is to *combine* the mental analysis and comparison envisaged in paragraphs 3 and 4.

For example, assume that a problem presents three enemy capabilities which, if adopted, will affect the accomplishment of our mission, and that we are considering three courses of action (CA-1, 2, 3) open to our own forces. A relatively easy and effective approach toward solution is:

Analyze and evaluate own CA-1 as opposed, in turn, by each of the three enemy capabilities. Make this analysis and evaluation in terms of all the facts, factors, and information considered, noted, or listed in subparagraph 2a. Consider enemy capabilities along with enemy dispositions. Our own dispositions certainly would be taken into account, and terrain considerations would be brought out in the "war-gaming" process of visualizing each tentative course of action from start to finish as it might be opposed by any one of the three possible enemy capabilities. Some factors would begin to appear more important than others during the detailed process of making the analysis. This fact would be taken into account—mentally—as it occurred. All factors such as own future dispositions, timing, surprise, and degree of risk would be considered to the degree appropriate.

Compare Two Courses

The next step would be to go through exactly the same process for CA-2. At the completion of the evaluation and analysis of CA-2—and here is the significant difference—*compare CA-1 with CA-2 while the appropriate considerations are fresh in mind.* Retain the better of the two courses of action so considered as a possibility for adoption. By comparing at this point rather than in a separate paragraph—or in a separate step—we avoid the entirely unnatural and generally impractical concept of withholding conclusions that occur so spontaneously in the thinking process that to hold them back is like trying to hide from one's shadow. Remember, we are considering a *mental* estimate at division level.

The next step would be to make a similar analysis and evaluation of CA-3, followed by a comparison of CA-3 with the course of action brought forward from the previous comparison. In the example posed, where there are only three own courses of action under consideration, the basis for paragraph 5, or the decision, would be the better course of action which evolved from the last comparison.

Form Remains Valid

The implications of this approach do not appear to be as serious as might at first be imagined. The JCS form, of course, is almost sacrosanct. But it is neither necessary nor desirable to change the form which is designed for a written, complex estimate at higher levels. Present concern is only with the interpretation and application of the JCS form at division level and below, or wherever a *mental* tactical problem-solving technique is appropriate. It *would* be necessary to change FM 101-5. The true nature of subparagraph 2c should be brought out, as well as the concept of combining the operations set forth in paragraphs 3 and 4 in a mental estimate. Because of the preponderance of division level instruction in the service schools, a profound change here would be in order. However, it is only by change, when change is in order, that we move forward.

If the procedures proposed herein seem overly simple, they probably are so only when viewed alongside the complex separating, emerging, withholding, partitioning, subconcluding and concluding now *taught* as the proper way to make a decision on a military problem. Once there was an old Army maxim to the effect that "you can't make it too simple." Perhaps we have lost sight of this concept when we seek to guide and improve a commander's decision-making process, but fail to appreciate normal human limitations and to realize that more often than not the *natural* way to do a thing is the best way.

It is evident that under our concept of future war the responsibilities of commanders of all sizes will be increased manyfold over what they have been on past battlefields. Commanders will be much more "on their own" and required to exercise extraordinary judgment, courage, and leadership. The composite nature of the new battle groups as opposed to strictly infantry, artillery, or tank units requires that leaders have thorough knowledge and training in the use and techniques of several arms instead of only one or two. The new equipment and weapons will increase the technical knowledge required of the small unit leader.

* * * * * * *

The quality of our Army, Active and Reserve alike, is still—and even more so than in the past—dependent upon the quality of the individuals comprising it. Each of us, then, share the responsibility of personally encouraging and setting the example to attract young men of courage, patriotism, and intelligence to join us and provide the leadership which will be so vital in any future war.

Lieutenant General Walter L. Weible

The Buyer-Seller Relationship In the Army Logistic System

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THE impetus of supply has been described as being from the rear forward. Since demands for supply originate with the requisitioner, the origin and the flow of supplies and equipment is at the unit being supported. Thus it is more proper to say that the supporting agent must be in a position to satisfy, without undue delay, the demands of the supported unit.

On occasion the Army has been criticized both during peacetime and wartime for demanding supplies which, after production, procurement, and delivery, have become stagnant or are wasted. Although no commander ever has been castigated for winning a war or campaign *uneconomically*, and there probably have been commanders who were castigated for losing wars or campaigns *economically*, it is still true that economy can and should be practiced in the Army. Economy of Force (Means) is a well-established principle of war.

Acknowledging this principle of war, the logistician's lament at all levels—from the Office of the Secretary of Defense to the supply sergeant in the field—is: How can I anticipate requirements to have on hand what is needed, but not too much? At successively higher levels in the logistic hierarchy a related problem arises: How can wild demands be prevented and overrequisitioning be minimized?

Screening and editing by depots against allowances, demands, or special justification has been the practice for a long time, but is not completely effective. It would be ideal if all requisitions from the field were for items positively needed. Generally, using units do attempt to anticipate requirements. But when requirements do not materialize the Army is placed in the embarrassing position of being overstocked on some items while other needs which could not or were not anticipated may not be filled.

In an attempt to create systems which would exercise more control over the management of inventories, Congress passed Public Law 216 in 1949. This law, in effect, creates a buyer-seller relationship between a supply officer and the consumer. Except for tanks, weapons, ammunition, and vehicles, no supplies owned by a Stock Fund can be issued from depot stocks (and in some cases from post stocks) unless Consumer Funds are available to make payment for the purchase of such supplies. The implementation of Public Law 216 was delayed by the war in Korea. Since then, however, stock fund-

Will the benefits of the Army Financial Management Plan outweigh the accompanying problems and disadvantages? Experience indicates the point of diminishing returns has been reached and reappraisal is needed

ing and consumer funding have been instituted. The effects of these programs are not yet fully realized by many military men.

Financial Inventory Accounting

The system of Financial Inventory Accounting (FIA) was the first major response to Public Law 216. It requires an expression of inventory in terms of money values. It was devised *by* supply people *for* supply people. In its simplest terms, FIA can be accomplished by a straight conversion of item balances to dollars: If the supply sergeant has 75 shelter halves worth two dollars each on his shelves he carries that particular part of his stock at an inventory value of $150. Quarterly reports can be assembled from item balances of assets, levels, receipts, issues, dues in, and dues out for homogeneous groupings or categories of supplies. Pricing of documents and maintaining daily or periodic journals and ledgers is not necessary.

It was inevitable that FIA be designed to provide a framework for the full implementation of the Army Financial Management Plan. Consequently, from a simple inventory control system, using dollars as a basis, it has been expanded to provide data for other purposes such as stock funding, consumer funding, several types of integrated accounting, command management systems, and other fiscal systems. Combined, these systems establish a requirement for the pricing of documents, daily postings of inventory transactions, and continuous reconciliation.

Stock Funds

Following the establishment of FIA, Stock Funds (or working capital funds) were established or chartered.

Within the Army itself there exist six "corporations" of the Army Stock Fund and four "subsidiaries," exclusive of the single manager corporations. Each technical service except the Quartermaster operates one corporation. The Quartermaster operates four subsidiaries (POL, subsistence, general supplies, and clothing and equipment). Each corporation or subsidiary is treated as a separate entity, reporting and justifying its operation independently. With the advent of single managership, other separate stock fund corporations have been chartered.

The assets of each corporation consist primarily of cash, inventory, and accounts receivable; the liabilities consist chiefly of accounts payable. Except for the major items of equipment (such as weapons and vehicles) ownership of stock located at depots in the Continental United States (CONUS), selected CONUS posts, camps, and stations, and practically all oversea command depots (less field army depots) is vested in the appropriate stock fund corporation. In other words, even though a radio is on the supply shelf of one of these installations it still is "owned" by the Signal Corps "corporation."

In effect, supplies move from a CONUS depot to an oversea command depot, and to certain CONUS posts, camps, and stations on a "consignment" basis. No funds are required until they are actually "sold." Thus no stock can be shipped to the consumer unless funds are cited on the requisition asking for the stock. Currently, the consumer may be a TOE unit, a T/O or T/A organization, or technical

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service supply officer at one of the posts where the stocks are owned by one or more corporate divisions of the Army Stock Fund. A station whose stocks are not owned by a Stock Fund submits its requisitions to a depot, accompanied by consumer fund citation in payment for stock desired. A station whose stocks are owned by a Stock Fund receives stock from a depot on a consignment basis without citing funds, but when issues to consuming units are made, Consumer Funds must be cited. This relationship is shown in Figure 1.

ILLUSTRATION OF THE POINTS AT WHICH "SALES" OCCUR BETWEEN THE BUYER (CONSUMER FUNDS) AND THE SELLER (STOCK FUND)

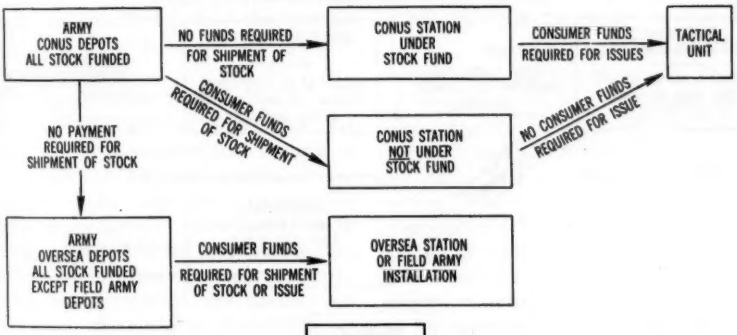


FIGURE 1.

Why are certain selected post, camp, and station stocks owned by the Stock Fund while others are not? In 1954, when most of the stock fund divisions were chartered, they capitalized only CONUS depot stocks, later capitalizing oversea depot stocks. Pressure on the Army to extend capitalization to posts, camps, and stations continued. In Fiscal Year 1955 (FY55) the Army agreed to capitalize the stocks of six major stations (all in the Third Army area) as well as quartermaster, medical, and dental supplies at 20 to 30 stations in other Army areas on a test basis. The results of this test are being evaluated to determine whether Stock Funds at station level are feasible.

Involved Relationship

The relationship between the FIA system of *inventory management* and the stock funding method of financing the *purchase of inventory* is important because it affects the basic organizational structure of the Army. Historically, the inventory and the people who manage the inventory at a CONUS post or oversea depot are under the direct control of the post or oversea commander. Post commanders are responsible to the Army commander for inventory management and oversea commanders are responsible for the management of all inventory within their commands. Under the FIA system each of these principal inventory managers prepares and reports his inventory and its dollar status to the Department of the Army.

Continental United States depot stocks are controlled by the chiefs of technical services who are responsible for their segment of inventory and its status. Command relationships are not disturbed when chiefs of technical services review requirements and recommend adjustments

to stock levels throughout the world based on Department of the Army policy. Command relationships are definitely disturbed, however, when a technical service, as a stock fund corporation, "owns" stocks located in oversea commands and in posts, camps, and stations. The president of the corporation (technical service chief) may be inclined to direct in rather close detail the management of inventories included in the capitalization of his company. The efficiency of supply personnel at posts and

mander ". . . with the resources necessary to perform his assigned function or mission, and that he be held strictly in account for the use of these resources." Costs of operations under this concept include the value of all supplies (less large items such as weapons and vehicles) drawn from a depot by the installation, or issued from station stocks to units if they are owned by the Stock Fund.

Consumer Funds are justified and allocated via command channels, between

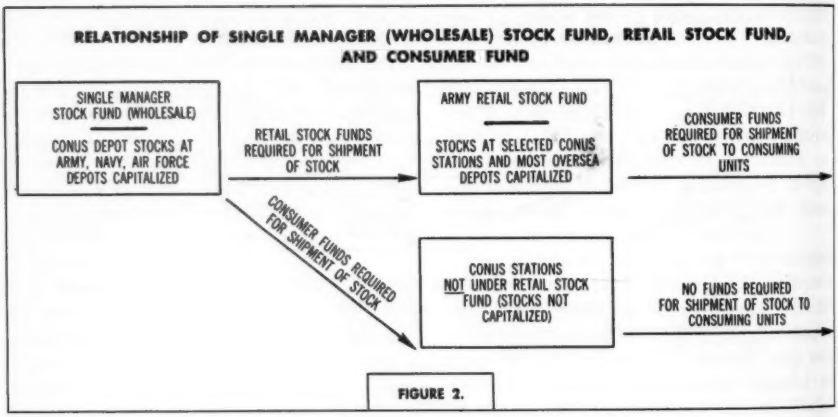


FIGURE 2.

oversea installations is judged by two interested superiors.

The FIA system attempts to exercise management of inventory by command; the extension of the stock funding concept to stations and oversea commands conflicts with command responsibilities regarding inventory management.

Consumer Funds

Subsequent to the establishment of Stock Funds as the "seller" of inventory, if was necessary to find a "buyer." It followed that funds appropriated to the Army by Congress for "maintenance and operation" would be the buyer or customer of the Stock Fund. Consumer funding is a system designed to provide each com-

installations, Army headquarters, CONARC, and Comptroller of the Army. In this manner a cost of performance type budget may be prepared, defended, funded, and administered in command channels. The point where "sales" occur between buyer and seller is illustrated by Figure 2.

The Programing Problem

Programing results in procurement of supplies or service. The June 1955 Task Force Report on Military Procurement to the Commission on Organization of the Executive Branch of the Government (Hoover Commission) noted:

The budget time cycle is so long that supporting requirements estimates become obsolete even before presentation of the

budget to Congress. . . . The restrictions imposed by expenditure controls further distort the efficiency of procurement. No sooner is the ordeal of preparing and revising budgets concluded than a rejustification process begins in connection with the apportionment, allocation, and allotment of funds. By this time the planning process—which began many months before—has become a morass of plans and estimates. Furthermore, the expenditure controls force procurement activities to follow a fiscal year cycle. This involves the development, review, and funding of buying plans during the first six months—and squeezes contracting (requisitioning, if funds are available) into the last six months with a peak in the last quarter of the fiscal year.

Flexibility Essential

The above quotation illustrates the questionable effectiveness and validity of the relationship between programs and the budget. At any rate, programing "guidance" as broad and general as it may be, is furnished to installation commanders who then prepare budgets. If any real detail is furnished, the chances are that it will change, and drastically so, *before* and even *during* the applicable fiscal year. The chief of staff does and should reserve the right to relocate troops and equipment and to change the divisional organization and missions of installations. These occurrences, however, drastically affect budgeting and expenditure of Consumer Funds by individual installations.

In certain areas an installation commander, responsible for executing programs at his installation, has little to say concerning these programs. The menu is prescribed and he has no control over expenditures for subsistence except for minor substitutions; the initial clothing allowance is prescribed and subsequent sales are made to individuals.

Chiefs of technical services have definite responsibilities for serviceability of major equipment items such as weapons, vehicles, and tanks, and prescribe standards for the maintenance of this equipment and stockage of necessary repair parts. The consumption of repair parts is dictated by the use of the end item and the standards of maintenance imposed. A station commander, unless he is also a tactical commander, has no direct control over consumption of repair parts by tactical units located at his station.

The question then is raised as to whether the consumer is indeed in a position to project consumer fund requirements (program) for purchases from the Stock Fund as presently envisaged.

Buyer-Seller Problems

The Army has had more than 18 months of experience under this relationship between the stock funded corporation as the "seller" and Consumer Funds possessed by the "buyer." Many problems have arisen, described as "minor, administrative, or local," to downright "outrageous." CONARC, the Army Maintenance Board, the Inspector General, and the General Staff are actively concerned.

Problems may be traced to two reasons, one attributed to the system described and the other to shortage or maldistribution of funds among the consuming installations.

The problems attributed to the system (bookkeeping and accounting for transactions between buyer and seller) are obvious and acknowledged. Additional personnel become necessary against ever-decreasing availability.

Problems attributed to the shortage or maldistribution of funds are more aggravating. Funds, like supplies, must fill a pipeline, and, like supplies, are subject to certain maldistribution. Once funds have been allocated to a station, they are indeed difficult if not impossible to pull back for reallocation between stations in a CONUS Army area, between CONUS Armies, or

between CONUS and the several oversea commands. In some cases it is too late. Installations are aware of this, and hurry to complete programs or obligate funds before someone decides to reprogram.

During Fiscal Year 1955 consumer funding was initiated on a "crash" basis. Admittedly, the field had little time to think about it and was rudely awakened to the fact that although consumption funds were available under local control, payment had to be made for supplies which were "requisitioned" previously.

There was little argument about paying for housekeeping supplies since they were more or less used on a regular basis. Arguments did arise, however, when tank engines, propeller shafts for vessels, X-ray machines, and refrigerator plants had to be purchased. The buyer made the point that he could not very well anticipate demands for purchases of such items, especially as they were so expensive. The seller (inventory manager), on the other hand, said he had only two primary means of financing Army inventory, one being with stock fund money, in which case he must receive payment for all issues; the other being limited to major items procured under the appropriation entitled, "Procurement and Production—Army," such as weapons, tanks, and vehicles which he can issue "free." If Consumer Funds are not too short at the time, the buyer grumblingly pays or cites Consumer Funds for his requisitions to the Stock Fund.

Rules Encourage Hoarding

Then came the argument over supplies which were in the possession of the consumer and no longer needed due to decline of troop strength, vehicle density, changes in TOE, or for one of many other reasons. The consumer wished to turn them in for some kind of credit to be applied to future purchases. At this time the seller points out an Army regulation which prohibits him from granting credit for items turned in to the Stock Fund if the Stock Fund is already in long supply. Granting credit for such returns, he explains, is tantamount to a procurement action on his part for items in which he already is in an overstocked position. By this time the individual representing the consumer cagily sorts out items for which he can get credit, and retains the rest "just in case."

Another factor encourages the retention of unneeded stock by installations. Two types of credit are available upon turn-in of property. If items in excess of levels at the station are found, and meet the criteria for granting credit, such credits are not available to the installation making the turn-in, but are deposited at the appropriation level in Washington, available for reallocation, if justified, in the same fashion as appropriated funds. There is little incentive in uncovering and making such returns. It is only under certain specific circumstances, such as exchanges of unserviceable for serviceable property and correction of errors in shipment, that credits granted can be used locally to offset subsequent purchases. Little incentive exists to return property to the stock fund corporation unless credit can be used locally, and such instances are not frequent.

Consumers Become Wary

Finally, the buyer and seller, having agreed that credit will be given for specific items turned in, now argue as to the amount of credit. The seller, represented by the stock fund corporation, points out he can give credit for something less than the standard price at which the item was sold, since he must pay for having the item classified and repaired before he can resell it. Therefore, he allows something between 50 and 80 percent of the standard selling price for selected items turned in, depending upon the cost of repair or renovation. Since it is administratively difficult to examine each item so returned and "ap-

praise" its condition upon return, a flat percentage credit is given, even though subsequent inspection indicates the item simply needs to be checked and repacked.

By this time the consumer's representative is indeed wary. Before turning in an expensive and perhaps complicated unserviceable assembly to a tank or weapon or vehicle, and receiving only partial or no credit against a replacement for it, he may attempt to repair it himself although instructions are to evacuate it for higher echelon repair. And the local repair may work—for a time. It is also possible that local tinkering will, in the long run, cause the end item irreparable damage. In some cases the temptation exists to attempt to turn in the entire end item, such as a tank or vehicle, and try to get a replacement which does not require Consumer Funds, rather than spend Consumer Funds for maintenance.

Considerable flexibility is given the installation commander regarding the use of his funds; some electing to lay more emphasis on repair of vehicles, others on maintaining civilian personnel strengths, maintenance of buildings, or other projects. It is not impossible for an installation commander to change his mind and elect to obligate Consumer Funds for a project other than the one for which he originally budgeted. A shortage of funds may force him to establish priorities. Under such conditions, representatives of the buyer or consumer have been forced to effect a control by denial of essential supplies or services, such as repair parts for field or organizational maintenance.

The encouragement of an "arm's length" relationship in the logistical system appears to be a dangerous precedent.

Stock Fund Property "Loans"

As problems arise between buyer and seller necessary "gimmicks" are evolved which in part alleviate the situation but create additional problems. One such "gimmick" is an Army regulation which permits the stock fund corporation to loan nonexpendable property temporarily for a period of 90 days. Prior to receiving the loan of such property, the consumer must promise to set aside 25 percent of its standard price value to ensure that he will have sufficient Consumer Funds to pay the Stock Fund for damage to or loss of such property. When it is returned the consumer pays only the cost of renovation. This is becoming a very popular type of transaction.

Permission must first be obtained from Washington to enter into such a transaction and to control its use administratively is obviously difficult. It is very possible to use this method as a subterfuge to delay payment for lack of funds.

In the case of large field exercises such as *Sagebrush*, some type of arrangement like this is necessary if the buyer-seller relationship is intended. In principle, it is also applicable to a stock funded station which must "borrow" bedding from the Stock Fund for use by an infantry company passing through. Records of such a loan must be maintained, and when the items are returned, Consumer Funds are charged with loss or damage of such property. The same problem is posed in connection with summer exercises of National Guard and Organized Reserve Corps Units.

Single Manager (Wholesale) Stock Funds

In addition to the six regular corporations and four subsidiaries of the Army Stock Fund, two new stock fund corporations recently have been added by the Army: one for subsistence and the other for clothing and textiles. Both of these resulted from the establishment of the single manager concept, an alternative to a "fourth service of supply."

Under such an arrangement a military departmental secretary assigned as single manager for a commodity such as subsistence or clothing and textiles capitalizes or owns stocks in Continental United

States depots of all military departments, both peacetime operating stock as well as mobilization reserve stock. Separate stock fund corporations are chartered for this purpose and are known as "wholesale" Stock Funds. Each military department, however, still operates its "retail" stock funded corporation which owns stocks at selected Continental United States posts or installations and oversea depots.

The departmental or retail Stock Funds make known their requirements to the wholesaler who makes shipment, but the shipment must be paid for by the retail Stock Fund. As supplies are issued from the retail stock funded installations, Consumer Funds are cited in payment. Those installations whose stocks are not capitalized under a retail Stock Fund, make payment direct to the wholesale Stock Fund with Consumer Funds.

Since single managership is relatively new, not much experience has been gained under such an operation. However, it is obvious that a buyer-seller relationship exists between the wholesaler, the retailer, and the consumer (Figure 2) and the problems previously outlined will arise.

Situation in Oversea Areas

In the case of US Army Forces Far East/Eighth US Army (Rear) stocks move from CONUS to depots in Japan on a "consignment" basis, with no fund citation. When stocks move from depots in Japan to Korea or to stations in Japan, Consumer Funds are required. When stock moves from the US direct to Korea, Consumer Funds also are required.

The situation is much the same for US Army Europe. Under Project *Mass* (Modern Army Supply System), currently operating between the US and the Seventh Army, fund citations are required for shipments made from the US to the Seventh Army. Under these circumstances, Continental United States acts as a "banker" for USAREUR which deposits a portion of its allocated funds with CONUS depots making shipments direct to Seventh Army. It is obvious here that the US depots acting as a "banker" can only ship supplies to Seventh Army to the extent that funds are "on deposit." If funds are short, demand cannot be filled. Of course, if it were desirable, USAREUR or the Seventh Army itself could act as its own "banker," price requisitions, and cite funds with every requisition presented. In any case, shipments of stock to either field army requires citation of funds on requisitions prior to the movement of supplies.

Costs of Operating System

No figures are available as to the costs of bookkeeping and accounting, either in terms of money or personnel, by either the buyer or the seller. From a practical point of view it is virtually impossible to segregate and identify such costs. Sufficient to say that these costs at the moment are over and above those for previously existing bookkeeping and accounting procedures. Presumably, this relationship is expected to cause savings by controlling investment in inventory and minimizing waste. As bookkeeping and accounting requirements increase at post, camp, and station level, the tendency is to employ machines. Certainly this is a forward step, providing the cost of generating the data —including lease or purchase of expensive electronic data processing equipment employing punched cards or tapes—is compensated for. Considerable paperwork has been added in the Defense Department as a result of the creation of the buyer-seller relationship.

Effect During Peacetime

Aside from the costs of maintaining such a system, whenever requisitions or documentation requiring the movement of supplies is delayed for fund citation, editing, or any reason whatsoever, the supply pipeline increases, and when the pipeline increases, investment in inventory on hand or on order also increases.

The current *Mass* test is designed to minimize and perhaps eliminate communications zone depots for most items. It involves rapid communication and rapid delivery. Additional steps currently required in requisition processing involve fund citation and adjustments which delay presentation of demands, and thus lengthen the supply pipeline.

From the description of where and how transactions take place down to the level of posts, camps, and stations under this system, it is obvious that instructions and procedures must be prescribed in detail by Department of the Army. Considerable correspondence is taking place between stations, armies, oversea commands, and the Department of the Army on accounting and bookkeeping details. Questions are asked, and differences of opinion result as to how accounts will be posted. Any system which attempts to have Department of the Army prescribe this enormous amount of procedural detail at post level is bound to require a sizable staff to write such procedures, act on questions, and continuously modify the procedures. Validity of data presented by the stations becomes suspect since qualified personnel to perform the accounting rarely are available.

Due to either a shortage or maldistribution of funds to stations, or the priority established by a local installation commander for spending allocated money, demands on requisitions are being distorted, disrupting the national stock status. For example, an installation or oversea commander may have budgeted for and received in his allocation an amount intended to buy repair parts from the Stock Fund. For other reasons he may be spending heavily on projects other than maintenance. Therefore, demands on the Stock Fund for repair parts will not materialize and the national depot system may become overstocked in items for which demands have fallen off and understocked in others. Under such circumstances the consumer is not a "captive customer" of the supply system which cannot respond to erratic demands.

Effect During Wartime

Obviously, the stock fund-consumer fund system and relationships are not applicable in the detail described during mobilization or wartime. It becomes difficult enough to run a simple stock record account to determine what is on hand and what is needed in an oversea command. It is worse to burden a field army with monetary journals and ledgers. At the same time, it is logical that some type of limitations are necessary at all echelons of command. The platoon leader allocates supplies, equipment, and transport to the squad making the main effort; and higher commanders do the same with larger units.

During times of emergency the supply system actually becomes an allocation of items or commodities in short supply. Allocations made in the US to various theaters of operation can be translated readily into terms of dollars. A theater Inventory Control Point might be able to maintain monetary records of inventory, receipts, and issues in depot stock in conjunction with item accounts which must be maintained under any circumstances. In such a manner, a theater commander could visualize allocations, assets, and issues of important commodity groupings such as POL, ammunition, clothing and individual equipment, subsistence, and repair parts. A modified financial inventory accounting system, to fit such circumstances, exists now and might be continued advantageously.

Insofar as CONUS stations are concerned, the buyer-seller relationship with its volume of accounting and bookkeeping would serve no useful purpose. Station assets and levels, in terms of dollars, based on demands or issues can be continued much as is now the case under modified Financial Inventory Accounting. This system would give station commanders,

CONUS Army commanders, and Inventory Control Points valuable information of the same commodity groupings and would serve as a necessary control. It also would be in keeping with the principle of economy of means.

Summary and Conclusions

The philosophy which manages a privately owned industrial corporation differs from the philosophy of running the business aspects of the Defense Department; many of the devices and procedures, however, are interchangeable. The absence of a profit motive on the part of the Government should not preclude the various departments and activities from keeping records of performance by which they can determine the costs of their operations. Dollars are a common denominator for measuring the magnitude of inventory and operations which everybody understands, and we may as well accept the fact that this criteria is here to stay.

Some military men may feel because their mission collides with some aspects of national life, that their activities must be considered entirely separately and apart from the normal activities of the country. This is not so; national defense is an integral part of national activities; it affects the Nation's economic life directly and, in turn, the political and economic climate affects national defense activities. Sometimes military men have opposed congressional scrutiny of military expenditures. The earliest United States reference I have been able to find occurred in 1816 when a General Smith of Maryland said, "not much good would come out of such a measure."

Since the passage of Public Law 216 which is the basis for installing "financial management" in the Army, there are indications that we have gone too far and too fast since the days of General Smith of Maryland. The preceding discussion has outlined some of the effects the creation of a buyer-seller relationship has had on our logistical system.

In time of war or mobilization it will not work. In peacetime a question is raised as to the actual benefits derived from such a relationship, considering the cost in overhead.

Several types of corporate enterprises have been established, and "sales" instead of "issues" of supplies and services are being made. The "customers" replenish the working capital of those corporations by paying their bill from congressional appropriations. Financial statements generated from such actions are expected to provide the primary management tool to measure efficiency and provide control for all echelons of management. These systems are extremely complicated and overemphasized.

The dangers involved can best be summarized by Mr. Gordon Gray's comment in 1949 on Public Law 216 before it was passed. He stated:

The responsibility of the Secretary of Defense for fiscal and budget matters is only one of his many responsibilities. His primary *responsibility is military preparedness of the Armed Forces, and organizational arrangements should be based on that fundamental premise. It would be a grave error to freeze into statute organizational arrangements which would subordinate effective military control and make financial control the main purpose of the Defense Department.*

Experience in implementing Public Law 216 revealed that some of the simpler systems of financially accounting for inventory have indeed been extremely useful. Assets, levels, requirements, dues-in, dues-out, excesses, and other inventory data, required by command, have assisted logisticians and commanders in controlling inventory. It appears, however, that a point of diminishing returns has been reached with regard to bookkeeping and accounting, and the buyer-seller relationship in our logistical system. A reappraisal is sorely needed.

A New Look In Military Traffic Management

Major General E. C. R. Lasher, *United States Army*
Executive Director, Military Traffic Management Agency

IN THE not so distant past, when traffic management generally was regarded as a lowly clerical function, a site was being considered for a certain military installation. A real estate bargain in wasteland about 30 miles from nowhere was snapped up at a ridiculously low price. The cost estimates failed, however, to consider one element in site selection that hangs heavy indeed over every modern traffic man: the "nowhere" aspect of the location. With the ink hardly dry on the dotted line, this troublesome fact of transportation intruded: the site would require construction of some 30 miles of brand new railroad—at a definitely nonbargain price of $35,000 per mile, and all at Government expense. Traffic management has come a long way since then.

Transportation to the tactical commander, other than the immediate provision of trucks and jeeps, tends to become a vast, impersonal service that may be taken largely for granted—until the need is felt. He may curse when trudging up a mountainside or when caught in a cost squeeze similar to that related above; his men may feel the lack of transportation with a packboard on their back, but concern goes beyond the griping stage when men and matériel fail to move or arrive.

The procurement of equipment and supplies in needed quantities is properly the function of the logisticians, but the procurement and utilization of the means by which this matériel moves is a matter for the transportation experts of the several military departments. Equipment is a very real commodity, but procedural matters are like the wind—powerful but without tangible substance. Colonel Frank A. Kowalski, in an article on "New Methods of Management" in the January 1957 issue of *Army* magazine, decried this gap between technology and management when he wrote:

This resistance to management and administrative change is difficult to understand in the light of the eagerness with which the Army seeks technological innovations.

So, too, the technological aspects of transportation have carried civilization from the primitive steam locomotive of the 1820's to the modern cargo helicopter, but traffic management—the means by which the modes of transportation are procured and utilized—has lagged shamefully.

The accusing finger does not, curiously enough, point only to the military. Private industry has appreciated the convenience of developments in transportation without attempting a corresponding development in the ability to use the technological advances to best advantage. The almost meteoric rise of the importance of management and managerial procedures has

At last, the logisticians who must plan the flow of both men and matériel in needed quantities to active theaters now are being backed by a single, unified agency of control for the management of military traffic

been accompanied by an interest in traffic management that is now as intense as it once was absent.

Early Military Efforts

While private industry was blissfully ignoring the economics of traffic management, the Army was feeling the managerial pinch early. Unfortunately, not always has the United States found her transportation system fully prepared for war. During World War I poor management of certain railroads brought frequent sharp rebukes from the Interstate Commerce Commission. A lack of adequate planning and control, and one of the most gigantic traffic jams in history that backed rail traffic from New York to Chicago virtually compelled Government operation.

Matters within the armed services were hardly better, although the situation was at least recognized. Brigadier General Frank T. Hines, then Chief of Transportation Service, wrote in his annual report for 1919:

The idea of central transportation control has not been carried to its logical conclusion in the United States. . . . It is believed that economy in administration, efficiency in operation, and greater coordination justify, beyond any question of doubt, all transportation for the War Department being combined into one service along substantially the following lines: A Transportation Corps to be charged with complete jurisdiction over all matters of transportation for all branches of the War Department.

When appropriate legislation was introduced into both houses of Congress, General Hines supported it; the Army Chief of Staff, General Peyton C. March, favored the idea, and General John J. Pershing approved. Public Law 242 of 4 June 1920, however, returned transportation to the Quartermaster Corps and the idea of centralized management of transportation for the armed services under an independent agency died.

World War II found the American system of transportation in somewhat better shape. The Great Depression had not endured long enough to destroy the efforts at modernization and rehabilitation exerted by both the Federal Government and the carriers themselves during the prosperity of the 1920's. The system creaked in places, but carried the load.

Need Was Recognized

Private industry now was awakening to the importance of applying the principles and practices of management to transportation matters that had served so well in the personnel, procurement, and production areas. The Army was keeping pace, for toward the close of World War II General Brehon B. Somervell testified before Congress:

We cannot have an efficient, streamlined economical organization of a single department of war if each of the three major combat commands within that department, air, ground, and sea, set up their own self-contained systems for administration, service, and supply.

The time, however, was not yet ripe, and General Somervell remained the still, small voice crying in the wilderness. Ten years were to pass before the management technicians were able to chart a path to the same position. After all, the opposition could always claim that the transportation activities of the various military departments were producing results.

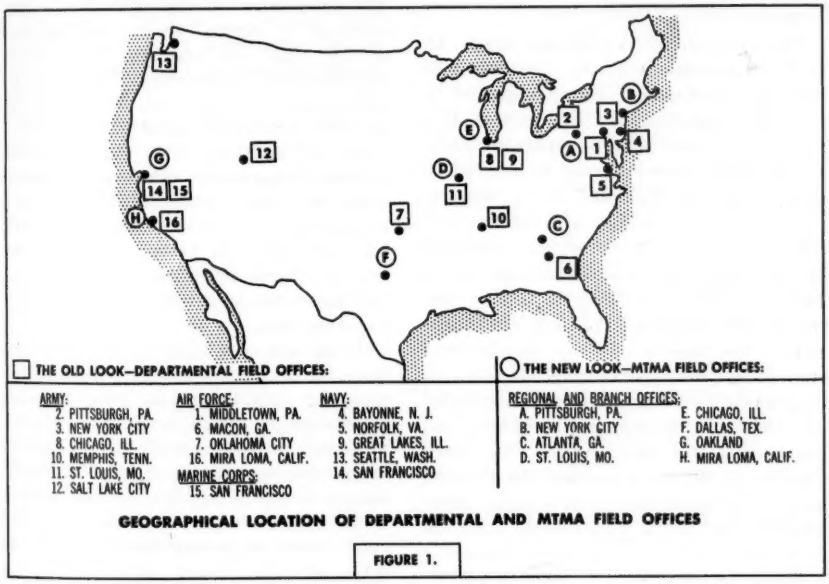
The Korean war indicated more clearly than ever before that a planning organization like the Joint Land Transportation Agency, while valuable, was as enlightened an approach to the problem of military traffic management as the assignment of similar functions in an industrial firm to a shipping clerk. Private industry in this advancing era no longer makes such mistakes. The lowly traffic clerk of old is now beginning to sit on the councils of the industrial mighty as a vice presi-

dent; the Army is struggling, with every promise of success, toward the same goal.

Transportation Corps Formed

The first step in the right direction was activation of the Transportation Corps in 1942, thereby relieving the Quartermaster General of the dual responsibility of both procuring and hauling military supplies. Immediately following World War II the Transportation Corps advocated a single organization under the Secretary of Defense which would provide transport services to all military agencies. In the fields of air and water transportation this concept of consolidation was realized with the organization of the Military Air Transport Service and the Military Sea Transportation Service. Similar consolidation of traffic management activities still had a long way to go.

The advantages of a close, detailed look at transportation are occasionally staggering. Once private industry had begun prying around in its traffic departments, the results frequently were explosive. Utilization of bulk inbound shipments in place of drummed shipments saved one company over $2,000 monthly; proper attention to the selection of the best mode of shipment cut $3,700 off the transportation bill of another firm; and a general stiffening of managerial procedures in the traffic department of yet another concern dropped $250,000 back into the treasury. Instance after similar instance could be cited.



GEOGRAPHICAL LOCATION OF DEPARTMENTAL AND MTMA FIELD OFFICES

FIGURE 1.

DOD Traffic Management

Within the Department of Defense, transportation occupied the time of approximately 1,400 persons employed in 21 separate field and headquarters agencies at an annual cost of $7,500,000. This figure does not include the cost of local transportation functions performed at the installation level. (Figure 1.)

By the close of the Korean war, each of the military departments was engaged actively in managing its own traffic. The Army had its six zone offices, the Navy its five Central Freight Control Offices, the Marine Corps a Freight Control Office, and the Air Force had four District Traffic Offices—all doing essentially the same thing. Obviously, here was a ripe field for management plowing not just on the basis of efficiency, but of economy, duplication, and overlapping activities and responsibilities as well.

The problem was recognized early. In 1945, for example, a group of experts was hired to investigate traffic management in the War Department. The report of this group concluded that a separate traffic management branch should be created to serve both the War and Navy Departments. Four years later a group of civilian industrial traffic managers organized by the Munitions Board recommended a Central Traffic Management Agency for the entire National Military Establishment. The results of these independent surveys by the Department of Defense or its organizational predecessors culminated on 6 October 1955 at a meeting of the Joint Secretaries. On this occasion, Secretary Charles E. Wilson presented the Department of Defense concept of a single managership for traffic management with the Secretary of the Army as the single manager.

Major General E. C. R. Lasher, a graduate of the 1929 class of the United States Military Academy, served in various transportation assignments prior to and during World War II. Following the war he was assigned to the Joint Military Transportation Committee and served as Transportation Officer for the Eighth US Army during the Korean conflict. General Lasher returned to the United States for duty as Commandant of The Transportation School, Fort Eustis, Virginia, and as Assistant Chief of Transportation (Traffic), Office Chief of Transportation. He currently is serving as the first Executive Director of the Military Traffic Management Agency in Washington, D. C.

Differences of Opinion

In March 1955, while the Department of Defense was searching its own traffic management soul, the Hoover Commission presented a variation that was not entirely new. Centralization of traffic management authority at Department of Defense level was recommended, strongly reminiscent of similar proposals for a "fourth service of supply." The Army, wanting a single traffic management agency, could not subscribe to an extra-departmental organization. These basic differences in concept were accented by the fact that neither of the latter two services possessed anything like the degree or amount of aggregate experience in transportation represented by the Army's Transportation Corps, although the Navy was somewhat the better off of the two with a diffused distribution of transportation personnel in it's Bureau of Supplies and Accounts.

On 31 January 1956 Secretary Wilson broke the deadlock of interservice disagreement by establishing a general policy framework in which single manager assignments would be made in supply and in service operations. A central traffic agency was to be established, and compromise became the order of the day. The main points of compromise were in the Navy and Air Force agreement to the placement of the new agency within a military department, and the Army yielding on interservice staffing.

Assignment of traffic management responsibilities to a civilian-staffed, "outside" agency as envisioned by the Hoover Commission would, first of all, deprive the Army of any command supervision, since personnel placed within such an agency to perform these functions would operate with divided loyalties: to the armed service that paid them, and to the operating agency that gave them orders.

Second, placing this central agency at the Department of Defense level meant the assignment of operating functions and policy-making responsibilities to the same echelon.

The large sums saved by private firms through proper traffic management became more and more attractive to the Department of Defense. But the Hoover recommendations were not accepted in full, and there was a lack of complete agreement within the Department of Defense as well. From the Army's viewpoint traffic management was a service that neither knew nor recognized organizational boundaries.

The Navy and the Air Force did not agree, expressing the view that traffic management was not an independent function, but merely a component of the overall supply mission.

Single Traffic Manager

A Department of Defense directive dated 1 May 1956 assigned traffic management within the United States to the Secretary of the Army who, in turn, directed the Chief of Transportation to organize the operating activity to be known as the Military Traffic Management Agency (MTMA). This directive became the charter for MTMA and set forth the basic purpose of the single manager assignment in this particular service area:

It is the express intent of this directive that implementation of the Single Manager Assignment for traffic management within the United States will obviate the requirement for any activity in any military service to perform departmental headquarters or regional type traffic management functions, except when performing missions assigned by the Single Manager.

On 1 July 1956, Department of the Army General Order Number 26, dated 29 June 1956, established MTMA as a Class II activity under the Chief of Transportation. (Figure 2.)

Management had at last reached transportation!

MTMA was designed specifically to take the individual departments out of the management and service aspects of transportation and, in so doing, reduce the former 16 field organizational units to eight. (Figure 1.) The major objectives of MTMA were fourfold:

1. Procurement and use of commercial transportation within the United States to meet military requirements.

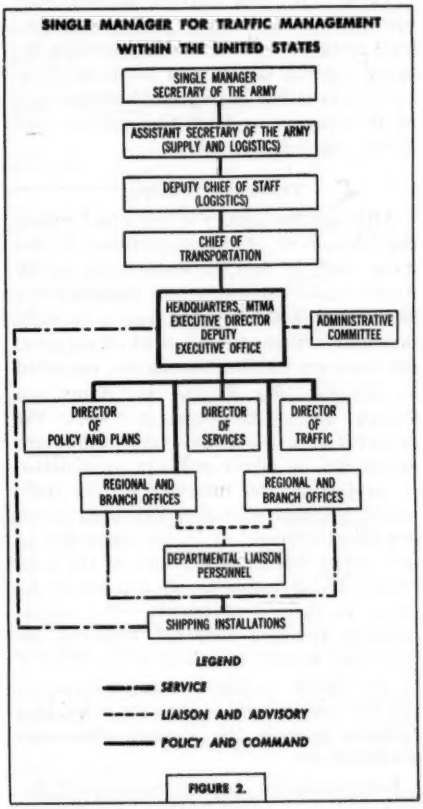


FIGURE 2.

2. Elimination of duplicating functions.

3. Emergency and wartime planning for use of commercial and military-owned transportation facilities.

4. Training in traffic management for military personnel of all the departments.

These objectives retained normal shipper type transportation activities at the local installation level, while providing detailed control, policy, and technical guidance from either the agency headquarters in Washington or from the regional and branch agency field offices.

Triservice Staffing

Although the agency is organized within the framework of the Department of the Army and, in fact, is commanded by an Army major general, job positions are filled by personnel drawn from both military and civilian specialists of all services. Positions are not, in consequence, regarded as "Navy," "Air Force," or "Army" as though particular vacancies were the property of a particular service, but are designated as either military or civilian. In protecting the interests of the individual services provision has been made for the attachment of liaison personnel to the agency headquarters and to the field offices. These liaison people will report directly to their departments. The implementing directive does not, however, require that organic positions within MTMA be distributed equally among the services; the sole requirement is that the individual assigned possess the highest obtainable qualifications.

Representation among the several departments is assured further by a feature common to all single manager assignments. All single manager plans provide for the organization of an administrative committee with membership drawn from the operating agency itself, each of the three military departments, and civilian personnel of the Department of Defense.

The Administrative Committee for Traffic Management, in consequence, is composed of the executive director of the agency as chairman, representatives of the three services, representatives of the Assistant Secretaries of Defense for Supply and Logistics, and for Comptroller, and whatever technical or professional personnel may be considered necessary. This committee, as an adjunct rather than an integral part of the MTMA, is designed to assist the executive director of MTMA "in identifying and overcoming" pertinent problems. It has neither command nor policy-making authority. Rather, it serves more in a consultive capacity than an operational or executive one.

Numerous Advantages

The Military Traffic Management Agency is a unique experiment in management, because it is the first attempt at single manager operation in a common service field. The most readily observable effects of the activation of the agency lie in the immediate reduction of the number of field offices, planning units, and committees used to procure and regulate transport services among the several armed services in the past. But other areas of economy, dear to the hearts of management engineers, also are exploitable.

Staffing the agency will absorb approximately 1,000 persons, of whom about 10 percent will be in uniform. This system has the advantage of utilizing career civilian traffic specialists while still providing a means of training military personnel in traffic management. Planning activities, of course, now rest with a single office and administrative publications prescribing practices and procedures in traffic work will emanate from a single source. The entire organizational concept of the agency envisions a neat balance between centralized managerial control and decentralized operating responsibilities. (Figure 3.)

What does this mean to the commander on the ground, at sea, or in the air?

The voracious monster that sits astride every active theater devouring supplies in fantastic quantities will be fed by a stream of matériel under a single, unified agency of control operating within the United States in accord with the best management procedures. The logisticians will look not to a variety of control agencies established under cumbersome cross-servicing agreements, but to one source of policies and procedures. The basic intent is to give the American taxpayer the best possible return on the investment of his tax dollar in military transportation. Rather than permitting accomplishment of this intention to diffuse throughout three military departments, the Military Traffic Management Agency wraps the entire operation into one administrative and operational package.

The profitwise industrial executive could ask no more.

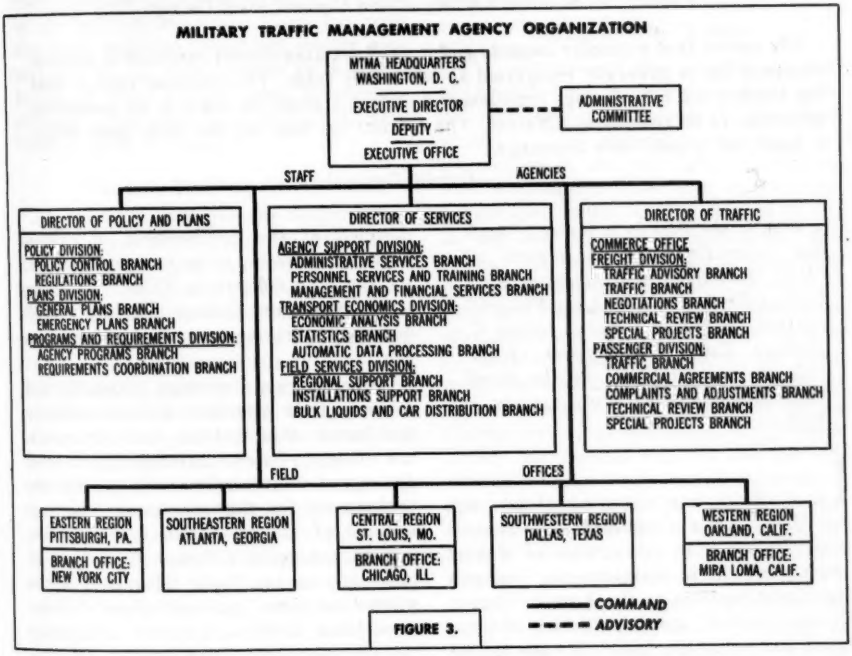


FIGURE 3.

MOVING?

If you are moving, please notify the MILITARY REVIEW, Fort Leavenworth, Kansas, of your change of address. Be sure to include your name, *old* address, and *new* address.

KEEPING PACE WITH THE FUTURE--

Methods for Teaching Officers to Think

Ivan J. Birrer, *Ph.D.*
Faculty, U. S. Army Command and General Staff College

The notion that a teacher imparts and a pupil receives is still reflected in popular language but is generally recognized as essentially false. ***The opposing view is that the teacher can help arrange experiences by which a pupil can learn to do something different—to be something different. The teacher can help set the stage upon which a pupil can acquire new learnings.***

—Harold Benjamin

This is the first in a series of articles expanding various aspects of "USA Command and General Staff College Keeps Pace With the Future," written by Major General Lionel C. McGarr, USA, *Commandant of the College, and published in the April 1957 issue of the* MILITARY REVIEW.*—Editor.*

IN OUR rapidly changing atomic age the U. S. Army Command and General Staff College is in the process of a total effort designed to maintain the College's significant position as the Army's "Senior Tactical School" and only "School of Combined Arms and Services." No one can be certain what military problems will confront our future commanders and staff officers; nor is it certain what tools (organizations and equipment) they will have at their disposal. What is certain is that there will continue to be substantial changes both in the problems to be solved and the means for their solution. In these circumstances the College effort must be directed at the development of critical military thinkers, or in common parlance —"Teaching Officers to Think." This article reports the College program to this end as it pertains to methods of instruction.

Although this discussion primarily will concern itself with instructional methods, the fact is that methods and curriculum are closely related. Accordingly, a brief discussion of curriculum will provide the background for this appraisal. The curriculum of the /8 * USA CGSC Course will be markedly different from that of previous courses. These differences can be related to three policies: First, the instructional units will depict exclusively the new divisional organizations—ROCID, ROCAD, and ROTAD (Reorganization of the Current Infantry Division, Armored Division, and the Airborne Division)—and an administrative support organization in consonance with these divisional organizations. The decision to use these new organizations automatically established the

* /8 is the short title for the 1957-58 USA CGSC Course.

USA Command and General Staff College is changing methods and shifting emphasis in instruction to ensure that its graduates will be better able to reason and function as military leaders in this complex age

requirement to rewrite completely instructional units.

Second, US Continental Army Command directed the College to depict atomic warfare as typical and treat nonatomic warfare as a modification of the typical. This directive demanded a major revision of our instructional units. These two policies were material to subject matter content, per se. Of more concern to the main theme of this article were curriculum changes supporting the redefined College "Instructional Purpose." [1]

Wanted—Problem Solvers

As redefined, the primary instructional emphasis will shift away from the mere *teaching* of approved doctrine to the production of competent military problem solvers. The chief concern will be development of reasoning and analytical thinking with consequent deemphasis of the "College Solution." Facility in oral and written communication becomes an integral part of the College effort. In order to accomplish this expanded instructional purpose, it was obvious that substantial changes in curriculum content were demanded.

However, these changes do not tell the whole /8 story. As a college professor once sagely observed: "No student was ever saved by a curriculum." What students and teachers do (instructional methods, if you will) are at least equally critical variables in the educational equation. At CGSC these variables have come in for their share of attention.

As regards its instructional methods, the College had become relatively fixed. A regular, recurring pattern of both classroom procedures and unit design had developed. These followed a characteristic order that could be described as the requirement-discussion-solution sequence. Typically, the student solved a requirement or requirements; the teacher conducted a discussion of these student solutions; and, lastly, the instructor summarized the discussion and issued or announced the College solution. This sequence was repeated over and over until all requirements of the instructional unit were considered.

Flexibility Was Needed

The sameness of this routine was forcibly pointed out in the report of the Educational Survey Commission [2] when they wrote: ". . . the general impression of the commission is that the observed methods were undesirably instructor, subject-matter centered, unnecessarily alike from day to day, and too rigidly controlled," and again, ". . . more *flexibility* in class size, in class seating arrangements, in the composition of class groups, and in the nature of assignments and exercises is much to be desired." Then, to nail down the argument, the commission saw fit to comment: "The commission believes that the typical College instructional methods are not completely harmonious with the College educational mission. Specifically, it considers that, on the *whole*, the present College classroom methods are more suited to the branch schools and undergraduate training than to the best graduate schools."

The Commandant directed a massive attack toward the goal of improvement of our teaching methods. Stemming from directives issued by him, a series of separate but closely related activities ensued. Each instructional department participated in a methods-contest. The rules were quite simple: demonstrate an instructional procedure or technique hitherto unused at the College, believed to have merit for use in /8.

Additionally, a continuous two-week

[1] "USA Command and General Staff College Keeps Pace With the Future," Major General Lionel C. McGarr, *Military Review*, Apr 1957.

[2] A commission appointed at the request of the Commandant to survey the College program. Members of the commission were Dr. Jacob S. Orleans, Chairman; Dr. Harl R. Douglass; Lieutenant General Manton S. Eddy, USA, Retired; Dr. Harold F. Harding; Lieutenant General Geoffrey Keyes, USA, Retired; and Lieutenant General Troy H. Middleton, USA, Retired.

(20-hour) workshop discussed and experimented with teaching methods appropriate to the new instructional purpose. Conducted by the writer, the methods workshop collectively developed the blueprint for /8 methods. All instructors will participate in this workshop.

At all College echelons command attention has been focused on the challenge to improve our teaching methods and procedures. Throughout, work in the methods field has been a collective effort. What are the achievements to date?

Variety in Classroom Procedures

The methods-contest produced a number of promising procedures and techniques suitable for occasional use at the College. One of these was the three-man map maneuver. In this technique three students (or multiples thereof) form a group—one on each side and the third as the umpire. Confronted with a military situation, each contestant decides what he will do. These decisions are announced to the other players at which time the umpire evaluates the probable results. No elaborate setup is required. Students get experience in decision making and tactical judgment.

The Department of Airborne Operations and Army Aviation proposed appointment and utilization of especially well-qualified airborne students as "assistant instructors" during the airborne course of study. Appropriately used, this proposal provides for a number of desirable goals: it exploits the specialized knowledge of the students; it tends to reduce the traditional student-faculty separation; it permits the instructor to use his talents and influences selectively—at critical points in the students' learning experience—instead of exhausting precious energy where it is not needed.

A third contestant suggested use of Alex Osborn's "brainstorming technique" in the classroom.[3] This is the technique developed in industry and advertising as a means of producing a maximum number of ideas or problem solutions. The key feature of the procedure is that small groups concentrate their mental energy toward the goal of developing as many possible ideas or problem solutions as they can in a short, concentrated period. After this "brainstorming session" the proposals are carefully evaluated. In a military setting the technique involves a "brainstorming session" to develop possible courses of action followed by a separate action to evaluate the courses of action.

These illustrations from the methods-contest, although not necessarily employed completely, are indicative of some of the ways the College will provide for needed variety in its classroom procedures. Within the framework of time-tested instructional methods, these variations will be selectively employed in order to enhance student learning.

Better Instructional Aids

These proposals are indicative of some CGSC actions to eliminate the charge that our methods are ". . . unnecessarily alike from day to day." But they do not complete the picture. In the field of instructional aids, where CGSC has traditionally been a leader, more and better facilities have been provided. A 4 x 8 sheet of "magic wall" is installed in each classroom. This

Doctor Ivan J. Birrer is Educational Advisor to the Commandant, USA CGSC. A 1939 graduate of Fort Hays Kansas State College (A.B. in psychology), he earned an M.A. degree in the same field from Clark College, Worcester, Massachusetts, in 1940. His formal education was interrupted in 1941 when he was called to active duty. He returned to reserve status as a Major, AGC, in 1946, but not before being graduated as a member of the 24th General Staff Class of the Command and General Staff College in 1945. Returning to Clark College he earned his Ph.D. degree in psychology in 1947 and in 1948 assumed his present position at the USA CGSC. Doctor Birrer was graduated as a member of the CGSC Special Associate Course in 1955.

[3] *Applied Imagination*, Alex F. Osborn, Charles Scribner's Sons, New York, 1953.

is the off-white chalkboard that doubles as a projection surface. With "magic wall" the instructor can combine on one surface writing, magnetic aids, and *Vu-graph* projection in any combination and all at the same time. Indeed, if he desires the writing can be done with phantom color chalks and dramatically portrayed with "black light."

Less dramatic than the new training aids but of much more significance is the major methodological change directed for /8. Here again the keynote was struck by the Educational Survey Commission which proposed: "Less time should be given to large 50-man class activity and more time to committee work, staff conferences, (and) critique activities . . . ."

Commandant's Guidance

The Commandant's guidance extended these comments. His instructional methods directive stated:

We will use small-group methods of instruction for as much of our instruction for /8 as lends itself to this method. By 'small-group methods' I do not merely refer to the superficial type physical grouping of students. I want the units of instruction used in 'small-group' instruction to be tailored to require actual group participation, study, and action.

It was to this task—development of the proper role and place of small-discussion groups—that the workshop devoted most of its attention. And it was from the workshop that the pattern described below was developed.

Many readers (perhaps most) know that for many years the College has conducted its classes primarily in 50-man classrooms with the instructor at the podium and with each student at a desk—and all desks arranged in neat rows. It is in this setting that the previously referred to pattern of requirement-discussion-solution sequence was played. In terms of student-instructor activities, approximately one-half of the classroom time has been spent in solving requirements, approximately one-third of the time has been spent discussing student solutions (recitation), and the remaining one-sixth of the time in instructor presentation—lectures (introductions, summaries, conclusions). Most requirements were issued to each student for individual solution.

True, there was usually no prohibition of student collaboration or consultation and informal consultation was common. However, the seating arrangement seriously restricted group work. The discussion periods often were more in the nature of recitation rather than of discussion. This was almost inevitable in view of the size of the classes and the instructor-subject matter oriented instructional units. Under the circumstances, there was limited opportunity for extended examination (discussion) of topics, especially when they arose spontaneously and were not "predicted" in the lesson plan.

Small Groups the Keystone

These were the conditions small-group methods were to correct. Several implicit assumptions were made. One is the belief that free interchange of ideas among students is a healthy learning atmosphere. A related idea is the belief that group work should to a considerable degree replace individual work. Still another is the idea that it is profitable to combine the solving of a problem with the discussion of solutions. Group work and discussion are applicable to certain fundamental aspects of the instructional purpose—such as development of critical thinking and reasoning—and especially suitable for the development of facility in oral and written communication. Taken as a whole, the Commandant's directive to use small-group methods whenever appropriate was a keystone of /8 instructional methods.

As attention was turned to small groups, problems of physical facilities arose. Major modifications of the existing school

plant or of the academic building under construction were infeasible. Classrooms would continue to be large enough to seat 50 students. As a practical matter the number of students and the number of instructors ruled out any serious consideration of reducing class size even if facilities permitted. What was needed was a practical way to employ small-group methods within the general framework of the larger 50-man classrooms. What was required?

Facilities Modified

Two major requirements were apparent: students must be seated in close proximity and in a relatively informal atmosphere that would facilitate interchange of ideas; some means must be provided to separate these small groups from each other. At the same time, there were contrasting needs: the instructor must be able at any time to deal with all 50 students in the room as one group; second, the size of the small groups must be capable of variation at the request of the instructor.

The solution adopted was to employ 3 x 6 tables in lieu of individual desks and to cluster the tables into four groups, one in each quarter of the room. This is the basic arrangement. To separate the four groups, heavy acoustical curtains will divide the classroom into quarters. The curtains can be drawn or folded back in a matter of seconds.

Students will be typically seated in this so-called basic arrangement. In those instances when the instructor is conducting his class from the front of the room, students will remain in this basic pattern—except for some turning around.

On the other hand, the instructor is in no way limited to this four groups per classroom arrangement. The tables readily permit any other arrangement—groups of any size—and individual work when tables are all separated with two students per table. It is clear that in the new arrangement the focus is shifted from *teaching* to *learning*, that the College thinks of its task primarily as one of providing experiences that will *enable students to learn.*

Changed Learning Pattern

The 1956-57 academic program was described in terms of student-instructor activities. What is the prospect for /8? As for the one-sixth of the time spent in lecturing, this fraction will be little changed. The /8 instructor will do less telling over again what students have already read in manuals and advance sheets. On the other hand, curriculum considerations will dictate more use of lectures to cover material for which *familiarity only* is the goal. To repeat, the total result time-wise will be no change.

The over-all time allotted for solution of requirements and their discussion is also unchanged. But the pattern differs considerably. In the classroom the amount of group work will be substantially increased and the solution of the requirements and a discussion of them will sometimes be combined as one activity. However, even within the small group, individual decisions are frequently required and instructors are charged with fostering and developing decisiveness. This group work may be under the direct charge of an instructor or, as frequently will be the case, under a student leader (with instructor monitorship). Student leaders will receive training in the techniques of conference leadership. They will be given necessary subject matter materials for advance preparation. Time for this advance preparation will be provided. At the same time, the instructor will in no sense abdicate his traditional responsibility. He continues to be the officer in charge.

To avoid possible misunderstanding two points relevant the small discussion groups are emphasized. In the first place it should be recognized that these small discussion groups are not in the nature of "war college committees." Quite the contrary. They

are work groups assigned specific tasks with controls adequate to ensure purposeful activity. Secondly, the College will continue to require an extensive amount of individual work by the student both in and out of class. At all times a student will be aware of his personal responsibility to make up his own mind. He will be constantly making decisions which he will be called upon to defend.

The foregoing means CGSC will have *variety* in instructional methods. The tried and tested methods of previous years will continue to be used when appropriate. But in addition, the newer instructional methods and techniques described herein will be exploited. Group work and the informal atmosphere of the small-discussion group will characterize the typical CGSC classroom. Variations in size of work group, nature of task, and classroom organization will be commonplace.

What will be the significance of these changes? Will they really make a difference in the quality of educational experiences of future CGSC students? More importantly, will they produce leaders of the future competent to cope with the manifold tasks that confront them? Can a proud and deeply rooted institution that counts among its alumni almost every distinguished leader of the US Army improve itself by these changes?

Although final answers to these questions necessarily will remain unknown pending subsequent performance of future CGSC graduates, the College is confident that the answers are in the affirmative. The changes described herein represent a carefully considered and deliberately developed program designed to meet today's requirements. In this program the best of traditional educational practices at the College are combined with newer techniques and procedures.

Today's military requirements call for a new kind of Army officer, an officer better able to reason and function in this complex age. Not only must he have more professional knowledge than his predecessors, he must also be able to speak and write effectively, negotiate skillfully, and be equally at home in the domestic or international arena. The /8 CGSC student will find himself in a setting conducive to the development of these requisite qualities.

Just as organizations and doctrine are in transition, so are instructional methods. Having taken this forward step, the College will continue to refine and improve its methods of instruction. In this evolution the hallmarks of Leavenworth remain unchanged. The College of today and of the future, as in the past, will continue to stress *practicality*, *thoroughness*, and *hard work*.

Here [Command and General Staff College] albeit with paper forces on paper battlefields, generations of selected Army officers received the training which in a large measure accounted for their subsequent success in World War II and Korea. As a testimonial to the importance of Leavenworth training, it is noteworthy that of all the officers who attained general officer rank during World War II, almost 80 percent were Leavenworth trained. Countless numbers of other graduates performed vital combat and logistical duties as their contribution to the accomplishments of the Army during the world's greatest conflict. At Leavenworth it was that they learned the art of careful analysis of military situations and problems, developed professional judgment, and acquired the readiness to accept responsibility and make decisions which has always been the hallmark of the Leavenworth graduate.

General Maxwell D. Taylor

MILITARY NOTES AROUND THE WORLD

UNITED STATES

Huge Carrier

Construction has begun on the *Kitty Hawk*, the fifth in the Navy's series of supercarriers. The *Kitty Hawk*, officially designated the *CVA 63*, is of the *Forrestal* class, will be 1,047 feet long, and driven by five 4-blade propellers. Over a thousand tons of aluminum will be used in the building of the giant vessel. Other carriers of this class are the *Forrestal*, *Saratoga*, *Ranger*, and *Independence*.—Official release.

Giant Auger

Two huge earth augers are currently under test by Army engineers. The smaller of the augers can dig a hole six feet in diameter and 20 feet deep at a rate of one-half foot per minute in ordinary unfrozen earth. The larger, a trailer-mounted machine, is capable of digging a hole nine feet in diameter to a depth of 70 feet. In other tests, holes 18, 24, and 30 inches in diameter have been drilled four feet deep in frozen earth. The teeth of the augers are made of high-grade alloy faced with tungsten carbide. Possible military use of the augers includes the construction of field fortifications and emplacements, shallow wells, waste disposal pits, and underground storage facilities.—Official release.

Missile Unit Activated

The Air Force has announced the activation of the 589th Tactical Missile Group, the fifth such unit to be formed. It will be armed with *Matador* missiles capable of carrying atomic warheads. Three of the other missile groups are stationed in Europe.—News item.

Rocket Altitude Record

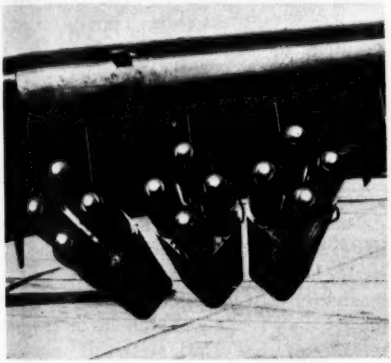
An improved version of the *Aerobee-Hi* has set a new altitude record for single-stage rockets in rising to a height of nearly 200 miles. The previous record, also held by this type of rocket, was 163 miles. The rocket was lost on the radar screen at the altitude of 180 miles when it was traveling at a speed of almost 5,000 miles an hour. The exact altitude to which it ascended will be determined by computation. —News item.

All-Weather 'Voodoo'

First test flights of the *F-101B Voodoo* two-seat interceptor have been completed. Powered by two *J-57* jet engines, this all-weather version of an earlier single-seat fighter carries a radar observer in addition to the pilot. Other operational models of the aircraft are the *RF-101A*, used for photoreconnaissance missions, and the *F-101A* fighter bomber.—Official release.

Rocket Announced

The Navy's five-inch *Zuni* high-velocity rocket is designed for both air-to-air and air-to-ground attack. Approved for operational use with the fleet, the folding-fin solid propellant *Zuni* will replace the World War II rocket, *HVAR*, in high-performance aircraft. It has almost twice



***Zunis* in launching racks**

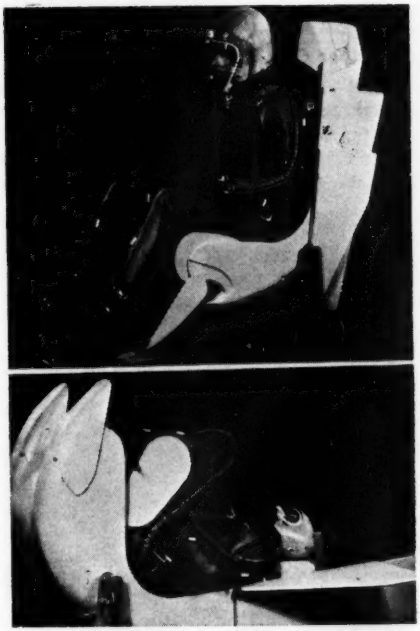
the velocity of the *HVAR*, and its folding fins permit a plane to carry four times as many of them. The new rocket is packed four to a launcher, which is also used as a transportation and storage crate. Another rocket currently under development is the ground-to-air *Hawk* which is designed for effective protection against low-flying aircraft, and is reported to be capable of carrying an atomic warhead. It was also announced that the first production models of the *Lacrosse* (MR, May 1957, p 65) have been delivered to the Army. The 20-foot-long ground-to-ground *Lacrosse* is powered by a solid fuel propellant rocket motor.—News item.

Vehicles Ordered

Contract negotiations are under way for the purchase of 900 medium tanks at a cost of approximately one hundred million dollars. In another purchasing action, contracts have been placed for over three and one-half million dollars worth of trucks and passenger busses for the Army, Navy, and Air Force.—News item.

Ejection System

An "aerial bobsled" ejection seat now being tested for use in supersonic aircraft is aerodynamically shaped and equipped with stabilizing fins. In use, the seat is started up its guide rails by an explosive charge. For the first 19 inches of its upward path the seat remains upright, then the seat is rotated 90 degrees to the rear,



"B" ejection seat

and by the time it has cleared the aircraft the pilot is lying on his back and the lower portion of the seat has folded to form the bobsled effect. A small rocket attached to the seat propels it away from the aircraft, and the folding fins prevent the seat from tumbling in the airstream. Extensive tests of this ejection system are planned.—Commercial release.

Landing Force Ration

A new 25-in-1 landing force ration is in use by the Marine Corps. Designed for the interim feeding of combat troops between the assault of a position and the time when the regular rations can be brought in, the ration is packed for aerial delivery. It is said to be stable in temperatures from minus 80 degrees to plus 160 degrees Fahrenheit. The pack is fire, water, insect, and fungus proof, and is unaffected by total immersion in salt or fresh water for two hours.—News item.

Weather Gun

The Army's *Shooting Sphere Anemometer* weather gun, nicknamed the *Breeze Buster*, is designed to secure precise wind velocities for use in computing missile launching data. In operation, the gun is

Experimental weather gun

angled into the wind and fired at an angle calculated to make the projectile fall back into or near the gun's own muzzle. Several shots may be needed to find the exact angle where the small steel ball used as a projectile falls back upon the aluminum protective shield. When this is done, a simple reference to a table shows the wind direction and velocity to an accuracy of within two miles an hour. The approximate height to which the projectile will rise can be controlled by changing the strength of the propelling charge. A stopwatch and chart are used in determining the exact altitude to which the wind is being measured. In tactical application, the device will be used primarily for wind readings up to 500 feet.—Official release.

Antisubmarine Defense

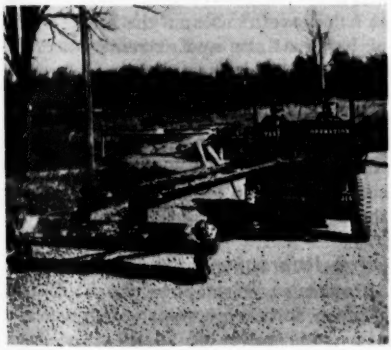
A new command known as the Antisubmarine Defense Force, United States Atlantic Fleet has been set up for the purpose of extending and increasing the fleet's defensive organization to combat enemy underwater craft. The new command will have centralized authority for all antisubmarine efforts in connection with the Atlantic Fleet's mission. This includes extension of the Nation's early warning service, and the coordinated training of the fleet air, surface, and underwater antisubmarine capabilities.—Official release.

Turbocatapult

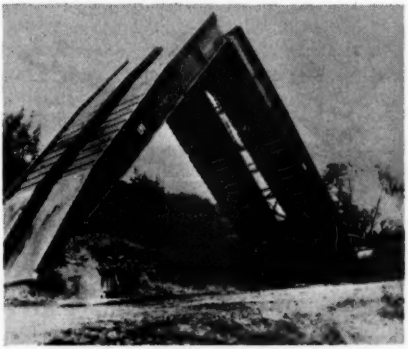
A revolutionary method of launching high-speed aircraft from short airfields utilizes a turbine-powered catapult. The device consists of six jet engines arranged in a circle with exhaust gases flowing into central turbines. The turbines drive a drum cable system which is connected to a shuttle that operates on a track in the runway. The aircraft to be launched is attached to the shuttle by means of a bridle such as used on naval aircraft carriers. Using this system, airplanes have been launched in less than one-fifth their normal takeoff run. The weight of the system is about 20 percent of that of a comparable steam catapult, and it is more economical in operation since it uses readily available jet engines which can be mainted by jet mechanics already trained. —Official release.

The *T-92* light tank

Mechanical minelayer



Jeep-mounted mine detector



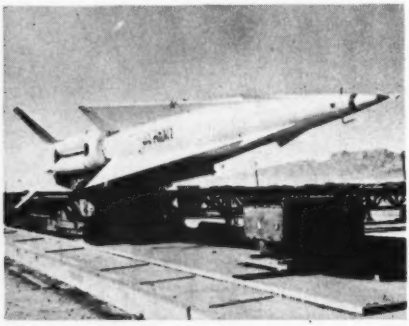
Mobile assault bridge

New Equipment Demonstrated

Recently shown in a public demonstration were an ultralight tank, a mechanical minelayer, a mobile mine detector, and a folding assault bridge. Currently under development, the ultralight *T-92* tank weighs only 18 tons; is designed for air transport; and armed with a 76-mm gun in a turret which also mounts a .50-caliber and a .30-caliber machinegun. The mechanical minelayer automatically digs a shallow trench, emplaces antitank mines, and covers them up. The mobile mine detector, designated the *AN/VRS-2*, is made of plastic and weighs only 225 pounds. Mounted on the front of a jeep, the searchhead is equipped with an automatic braking and declutching device which causes the vehicle to stop when it passes over a metal object. When not in use, the portable detector is carried on a rack in the rear of the jeep. The mobile assault bridge is 60 feet long, 13½ feet wide, and can carry a 60-ton load. It is carried on a modified *M-46* tank that provides the power for the emplacing mechanism, and, at the same time, functions as a counterbalance when the bridge is being extended. The aluminum alloy span can be emplaced in two minutes and retrieved in 10 minutes if necessary, according to the announcement.—News item.

Air Defense

The *Nike-Hercules* (MR, Feb 1957, p 66) is undergoing final tests and is expected to be in the hands of operational antiaircraft units in the near future. Although longer, heavier, and double the diameter of the currently operational *Nike-Ajax*, the *Hercules* model will have maneuverability at altitudes far in excess of those capable of being reached by the *Ajax*. With modification, the existing ground control equipment will be able to handle both models of the rocket—the modifications are said to add to the effectiveness



The *Nike-Hercules*

of the *Ajax*. By midsummer about 70 percent of the antiaircraft battalions in the continental defense system will be armed with *Nike* missiles. In addition, the *Missile Master* (MR, Aug 1956, p 66) is being installed at undisclosed key installations in the defense system.

It has been announced also that the Army has changed the name of its Army Antiaircraft Command (ARAACOM), which defends United States cities and other vital installations against hostile air attack, to the United States Army Air Defense Command (USARADCOM). This organization is the Army component of the Continental Air Defense Command (CONAD) which also includes Air Force and Navy forces under a joint interservice headquarters.—News item.

CANADA

Homing Torpedo

An air-to-water homing torpedo will be in operational use by Canada's antisubmarine forces this year. The torpedo can be launched from naval or air force planes, and will home on a submarine on or below the surface of the water.—News item.

Improved Research Reactor

Canada's third nuclear research reactor, the NRU (National Research Universal), is scheduled to be activated this summer. Like the other two reactors in the Chalk River area, it will be devoted exclusively to research and experimentation in the peaceful uses of the atom. Because of its great size and extremely high flux, NRU will make tests at a faster speed than any other reactor now operating in North America or Europe. The big reactor will require 43 tons of heavy water, which it uses instead of graphite, and will be cooled by 20,000 gallons of water pumped through it per minute.—News item.

Large Icebreaker

Canada's most powerful icebreaker, planned for early construction, will have a cruising range of 20,000 miles and a speed of about 10 knots. Equipped with an advanced type helicopter hangar and a flight deck that can handle three helicopters, the 315-foot vessel will be able to spend the full Arctic season at sea without stopping for supplies or refueling. It will have three propellers powered by diesel electric engines, and is to be "push-button" controlled.—News item.

NATIONALIST CHINA

Receive Warships

The United States is loaning six warships to the Chinese Nationalist Government as replacements for over age vessels operated by the Chinese Navy. Five of the vessels are 170-foot-long patrol craft, and the sixth is an *LST*.—Official release.

AUSTRALIA

Standardization Plans

Planes and guns of the Australian Air Force and Army will be standardized with those used by United States forces according to a recent announcement. Under this plan, the air force will be equipped with fighter planes such as the *F-104 Starfighter*, and transport planes like the *C-130 Hercules*. The Australian Army will receive US 105-mm field guns and will be armed with the Belgian *F.N.* rifle. A two and one-fourth million-dollar program for production of the *F.N.* rifle has begun.

National service quotas will be reduced from 39,000 to 12,000 per year under the new defense program. This is expected to release about 2,000 Regular Army men—who have been devoting their time to training—for other duties, and to provide more money for purchase of modern equipment. Defense outlay for the present year is expected to be $426,475,000.—News item.

NETHERLANDS

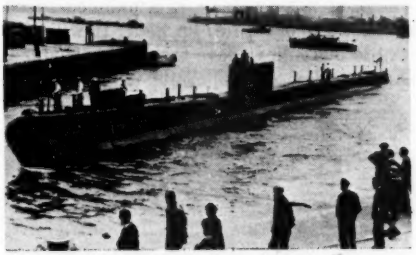
Carrier Modernized

The Netherlands light aircraft carrier, *Karel Doorman*, is undergoing modernization and will be equipped with a modified angled flight deck and steam catapults. Originally named the *Venerable*, the *Karel Doorman* was purchased from Great Britain in 1948. Steam catapults are now in use on carriers of the United States, British, Australian, and Canadian Navies, and are planned for use on the French carriers *Foch* and *Clemenceau* now under construction.—News item.

GREAT BRITAIN

Fast Submarine

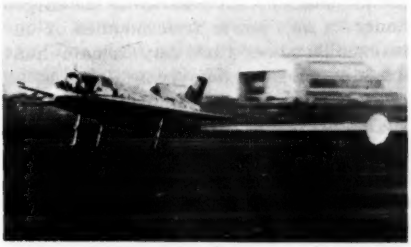
The high-speed submarine, *Explorer*, normally obtains its power from conventional submarine motors, but it is also equipped with turbines which derive their power from diesel fuel burned in steam and oxygen formed by the decomposition of high-test hydrogen peroxide. Thus the submarine is completely independent of the outside atmosphere for the supply of oxygen when operating submerged. This permits the diesel motors to operate without the release of telltale bubbles on the surface. The unarmed *Explorer*, which is used as a fast target in training naval and aerial vehicles in the latest tactics against high-speed undersea raiders, weighs 780 tons and is over 225 feet long. It is said to be very maneuverable, and has exceeded a speed of 25 knots submerged. Superstructure fittings of the speedy underwater craft are retractable.—Official release.



Speedy *Explorer*

VTOL Plane Tested

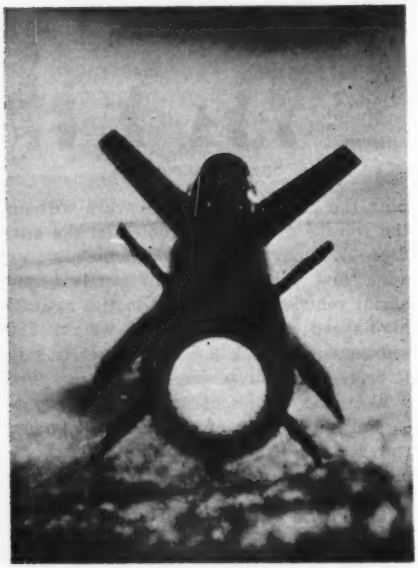
The *Short SC-1* (MR, Mar 1957, p 70) has been flight tested using normal takeoff and landing techniques. Development is planned to continue sometime before unrestricted vertical takeoff and changeover from hovering to forward flight is attempted.—Official release.



***SC-1* VTOL Aircraft**

Missile Plans

Missile development work in Great Britain includes a ballistic missile with a range of 2,000 miles and a planned speed of about 10,000 miles an hour. It will rise 400 to 500 miles above the earth's surface. Also under development is an air-to-ground missile that will fly to its target under its own power from manned or unmanned bombers that may remain hundreds of miles outside enemy defenses.



Firestreak **just after launching**

The *Bloodhound*, a ground-to-air defense missile revealed as in the production stage, is powered by a *Thor* ramjet engine in addition to rockets, and will have a speed in excess of 1,000 miles an hour. Its low fuel consumption is said to make extremely long-range interception possible. British Gloster *Javelin* and English Electric *P.1* interceptors are to be equipped with the *Firestreak* air-to-air guided missile. The *Firestreak*, which has four stubby wings and four control fins, uses an infrared guidance system that enables it to engage high-speed aircraft at great heights, and is immune to the jamming employed against conventional radar-controlled weapons. The *Firestreak* is carried in launching racks attached to the wings of the aircraft and may be fired singly or in pairs, or jettisoned in an emergency. —News item.

Underwater Power Link

Under study for several years and now in the planning stage is a scheme to link the electrical power systems of France and England by submarine cables across the 26-mile-wide English Channel. Tests have shown that the power cables can carry as much as 100 megawatts of electrical power at 130,000 volts. As planned, four cables will be used, three for the transmission of three-phase current and one as a replacement standby. This will enable the French to draw power from the British side during the summer low-water periods when their own sources are restricted, and during the winter to supply England when the British power sources are overloaded.—News item.

Atomic-Powered Vessels

Great Britain's 80,000-ton atomic-powered tanker planned to be in operation in the early 1960's (MR, Jun 1957, p 73) will have a propulsion unit which is expected to operate for 16 years without replacement. In contradistinction to normal practice, the power unit of the big tanker will be placed amidships, rather than in the rear of the vessel. The largest tanker planned to date will displace 106,500 tons and will have a top speed of 18 knots. The USSR, Japan, Norway, Sweden, Holland, France, and the United States are working on atomic-powered surface vessel projects. The Soviet entry in this field is the 16,000-ton icebreaker, *Lenin* (MR, Mar 1957, p 72), to be launched late this year. —News item.

USSR

Ukraine Steel Center

A small steel mill with a single blast furnace that has been in operation for several years will be the core of a large iron and steel processing complex being developed in the Ukraine at Krivoi Rog, about 85 miles southwest of Dnepropetrovsk. The development will include furnaces of 500 tons capacity, a blooming mill, a rolling mill, and a continuous strip rod wire mill. The latter is said to be the first automatic continuous double-strand wire mill in Europe.—News item.

Delta-Wing Plane Tested

A delta-wing experimental fighter called the *Sukhoi* is under test by the Soviet Air Force. The new lightweight interceptor features a small thin wing with a 60-degree sweepback, and a similarly swept-back tail. A split air intake is located just below the pointed radar-scanning nose of the plane, and the rear lower line of the fuselage has a slight upsweep. The landing gear legs are housed in the wings, but retract so that the wheels are stowed in the lower fuselage just ahead of and below the axial-flow jet engine which is located well to the rear. The *Sukhoi* is armed with two large cannon, one on each side of the fuselage, mounted well back from the nose. Performance data for this aircraft are not available.—News item.

Powerful Synchrotron

Initial tests of what is claimed to be the world's most powerful atom smasher have been successfully completed according to a recent announcement. In the tests, protons were accelerated to an energy of over eight billion electron volts, and the big synchrotron is expected eventually to reach a level of 10 billion electron volts. The heart of the instrument is an electromagnet 184 feet in diameter which is designed to speed protons through the complete cycle four and one-half million times in little more than three seconds. Plans have been revealed for development of an even larger accelerator with a designed output of 50 billion electron volts.—News item.

Land Forces Reorganized

In a reported switch from the traditional dependence on massive land forces, the Soviet Union has organized a new "rocket force" to take over missile development and air defense. The new force will operate on a par with the army, navy, and air force, and is said to be commanded by Marshal Sergei S. Biryuzov, former Soviet commander in Austria during the four-power occupation of that country.—News item.

WEST GERMANY

Rocket Test

West Germany's first post-World War II rockets will be tested this summer. The rockets are described as two-stage meteorological missiles which will carry scientific instruments to a planned altitude of 20 miles.—News item.

Penal Code

The West German military penal code provides that servicemen accused of felonies will be tried in civil criminal courts, and that civilian law governing minors will apply to servicemen under 21 years of age. The right of commanding officers to administer punishment for minor disciplinary infractions is retained, and a "troop service court," a three-man board consisting of a civilian judge, a general staff officer, and a serviceman equal in rank to the accused, will have jurisdiction in nonpenal offenses. This court can punish only by reduction in rank. Under the new system the death sentence may not be applied even in wartime, prisoners may not be shackled, and the penal battalions of the old German Wehrmacht have been eliminated.—News item.

UNION OF SOUTH AFRICA

Uranium Production

A uranium processing plant at Potchefstroom in South Africa is in full production, having produced 4,440 tons of granulated uranium oxide for export in the past year. The plant covers 300 acres, and is planned for expansion. It is said to be the largest of its kind in the world.—Official release.

SWITZERLAND

Fighter Evaluation

Swiss authorities have completed evaluation of the *Mystère IVA* in a search for a replacement for the present *Vampires* and *Venoms* in the Swiss Air Force. The next airplane planned for test by the Swiss are the Canadair *Sabre 6* and a *Hawker-Hunter F.6*.—News item.

INDIA

Defense Spending

It has been estimated that India will expend over half a billion dollars on defense during the next year. This is about 100 million dollars more than was expended last year, and represents about 40 percent of the total estimated revenue. The additional funds for defense are explained as needed for the purchase of supplies for the army and air force.—News item.

FRANCE

Expanding Submarine Fleet

New submarines planned or under construction for the French Navy include six of the oceangoing 1,200-ton *Narval* class which is capable of a speed of 18 knots submerged, four *Arethuse* class, built especially for hunter-killer action against other submarines, and nine of the 700-ton *Daphne* class. By 1961 the French Navy expects to have 17 conventional submarines in service, 13 of which will be new. Additionally, a nuclear-powered submarine is under study. The French submarine fleet currently consists of five French-built undersea vessels, five of German, and three of British construction.—News item.

IRELAND

Extend Airport Facilities

The Shannon Airport is to be extended and improved to accommodate the large jet-engine aircraft expected to be flying trans-Atlantic air routes by 1959. The improvements include an additional runway and will cost approximately three million dollars. Air traffic using the Shannon facilities has more than doubled in the past five years.—News item.

CEYLON

Agreement Reached

Great Britain will be allowed to continue the use of the Trincomalee Naval Base and Katunayake Air Base in Ceylon for a maximum of five years for the storage of oil and ammunition, and for communication purposes under the terms of a recent agreement between the two nations. At the end of this period, Great Britain has agreed to remove her storage depots and communications network. General administration of the bases will be handed over to the Ceylonese Government this year.—News item.

NATO

Missile Agreement

Advanced defensive missiles which will be included in the United States mutual aid program for 1957 include the *Honest John* and *Matador* ground-to-ground missiles, and the *Nike* ground-to-air rocket. Although all of these weapons are capable of using conventional or atomic warheads, no modification of the United States law, which forbids the transfer or sale of nuclear components for weapons, has been indicated. Allocations of these weapons will be to the North Atlantic Treaty nations, based on the guidance of NATO military authorities.—News item.

FOREIGN MILITARY DIGESTS

The Art of Command in the Nuclear Age

Digested by the MILITARY REVIEW from a copyrighted article by General Sir Richard N. Gale in the "Journal of the Royal United Service Institute" (Great Britain) August 1956.

NEW impacts have come to bear on the problem of the art of command. Just as a painter stands back from his canvas to get a view of the picture as a whole, so we military men should stand back occasionally and look at our works, and thus, perhaps, see whether we have indeed kept a sense of proportion. Theoretical study is good, provided it is not indulged in too much, but continuous theoretical study is likely to blur the practical approach.

Since 1939 there have been vast experiences, differing from those of previous wars and in many respects more dynamic in their results. We have had the experience of war in Europe, Africa, and Burma. We have been able to observe generalship as exercised by the British, the United States, the French, the Russians, and the Germans.

We have witnessed the full development of mechanization and of armored warfare; advances in wireless and radio relay; the development of a virtually new staff system; and what might be called the "complex" of planning and of the conduct of large-scale operations.

There has been an immense development in aerial warfare. We have seen the impact of air strategy on over-all strategy as well as upon the conduct of land campaigns; the advent of the guided missile, rocket launchers, and remote or electronic control of weapons over great distances; and finally, advances in the entire field of scientific development and an ever-increasing adaptation of engineering skill to military activity.

We are familiar now with the growing dependence of groups of nations on the resources and efforts of each other. We are in the era of grand alliances in the field of planning and actual conduct of operations, and we have integration and standardization of both methods and equipment in peace as well as in war.

Lastly, and most important of all, we have the impact of nuclear warfare upon the whole conception of war.

Difference of Function

Field Marshal Lord Montgomery will, in my opinion, go down in British military history as the man who showed, perhaps more than anyone else, how a general should command. Lord Montgomery sepa-

rated himself from his staff: he left the staff machine to the control of his chief of staff. In this way he ensured he would never get deeply involved in minor problems related to the implementation of policy. Thus he was left clear to decide on the correct policy, to ponder and conclude the best line to take, and, what was far more important, to look and plan ahead. We can conclude that the general must not allow himself to be caught up in the work of the staff. He must leave this to his chief of staff and, if necessary, set up a small separate tactical headquarters from which he controls events.

There is a distinct difference of function at the various levels of command. Army group, army, and corps commanders are not different people carrying out similar functions at varying levels—they each have their different functions within their respective spheres. These differences are manifested in many spheres, but it is in terms of time that we find the simplest examples.

A corps commander is concerned with the immediate battle and the events of the moment are his principal worry. The army commander is concerned with affairs perhaps one or two or even three days ahead. He watches the movement of enemy reserves and so, in terms of air reconnaissance and air action, he is looking deeper into the battlefield. Logistic support for the subsequent phases of the battle is his concern and logistic planning requires a long view.

The army group commander thinks in parallel with a tactical air force commander. He is concerned with the grouping of his armies for subsequent operations and, with his partner, the tactical air force commander, is planning for the development of operations on an altogether broader scale.

At the same time, each of these commanders knows that subsequent operations will be of little avail if today's battle is lost. This leads into the problem of decentralization.

The frank recognition of these different responsibilities and functions calls for a great deal of mutual confidence. Unless, for instance, an army commander has faith in his corps commanders and leaves tactical decisions to them, delays will occur at crucial moments and great opportunities will be missed.

On the other hand, if full advantage is to be taken of the flexibility of modern long-range weapons, a degree of centralization becomes necessary. At times this may bring the army level of command for specific purposes into the corps sphere. Nevertheless, the principle of difference of function at varying levels is of the greatest importance and neglect of it will result in interference and consequent misunderstanding.

Clarity of Directives

The great commanders of the last war generally put their problems, their analysis, and their intended plan over to their subordinate commanders personally. They understood the vital necessity for ensuring that their intention was known by the subordinate responsible for its execution. When they did it themselves there was only one person to blame if it was not properly understood. Lord Montgomery always adopted this plan. Moreover, he appreciated the necessity for simplicity. He was terse and to the point. The direct personal touch with subordinate commanders, coupled with the ability to put the intention tersely and in simple language, are essential to effective command.

In a young officer, comparatively loose statements are merely annoying. Little harm can result from them save that unless the habit of loose verbiage and untidy thought is cured early he will have to do a deal of learning later, or if he reaches senior rank, he will be in danger of becoming a nuisance or even a *liability*.

Precision of thought is essential to good

generalship: and precision of thought is almost impossible without a proper understanding of the meaning of words. Language, both written and verbal, is the only vehicle for conveying wishes, intentions, instructions, fears, and doubts. The more clearly expressed the thought, the greater is the chance of its being grasped by others.

This leads to control of events once battle is joined. The art of command lies in the retention of it. Guderian in the German Army was a good example of this and so too was Rommel, probably the greatest of the German commanders. Modern battle is on a large scale, and it may appear difficult at first for the commander to decide where is the best place to be. The art of generalship lies in the ability of the general to discern where this point is.

Rumor is a lying jade and many rumors that reach headquarters well in rear are alarming—they present pictures often quite different from the true situation at the front. When, however, the situation at the front is dangerous, the general can best gauge and decide on the spot what steps he should take to relieve the strain. His presence in moments of doubt, and in situations which appear bad to those on the spot, often will give confidence; and his personal approbation of action which they have taken will put heart into his subordinates. General Ridgway's command in Korea is a splendid example of the influence of a great commander in a battle when, through personal intervention, a well-nigh disastrous retreat was halted, giving way to offensive action in which every man had unbounded confidence.

Decentralization

This is not an advocacy of too rigid a control in an age when we must be prepared to decentralize. It is essential to decentralize and to give full range to subordinates to develop their initiative, but it is equally important to keep such a grip that the commander is quite confident that it is his plan and not somebody else's interpretation of it which is being put into effect. The architect must watch the erection of the building.

Lord Nelson was a great exponent of decentralization. A study of his methods will show, however, that he was most meticulous over the plan. His captains were left in no doubt of it. His system of signaling was designed to ensure his control, yet no band of subordinates ever felt more free to develop their initiative than his captains.

Radio gives commanders and staff the ability to retain control over large bodies of troops over great distances. Guderian's system of command exercised so personally was made possible only by the fullest use of radio, which kept him in touch with his headquarters while he was watching events up forward. But radio communication must not be permitted to so detach a commander from the battle that he feels with its aid he can exercise remote control from his main headquarters in the rear.

The relationship between commanders and their staffs is of extreme importance. The complexities of modern equipment, the size of modern armies, and the immense logistic tail which so characterizes large armies today have been largely responsible for the growth of staffs. Government by correspondence may be dangerous, but generalship by correspondence is worse.

The staff machine has two straightforward functions. One is to serve the commander and the other is to help the troops. The present large and cumbersome staffs are in danger of defeating their object, and may, and sometimes do, merely create misunderstanding. Large, unwieldy staffs tend to take control of events; they tend to become unyielding. Nevertheless, fail-

ure to use the staff machine for estimating problems may lead to trouble. Two commanders dealing together without reference to the staff may keep many people busy for many hours on much unnecessary work.

Two Elements

There are two elements to this business of command. One is the element of actual personal command; the other is the element of procedure. Procedure is an excellent servant but a shocking master. The entire staff machine is geared to the element of procedure. The variety of staff actions, the vast number of different units, both air and ground, that have to be on the move, and the logistical or administrative activities that have to be set in motion demand an orderly approach. A system of procedures has been evolved, and this is the outcome of experience rather than of whim or caprice. It has, however, been evolved in an era of war.

In war individual demands and even caprices are met because, as a general principle, those in authority will tend to do anything rather than hamstring the men directly responsible for the fighting. It is in this atmosphere that large and frequently overlarge staffs were incubated. In peace, and particularly long periods of peace, the pendulum swings in the opposite direction and essential elements to the smooth running of staff often are cut and undue risks are taken.

The net result was that those who suddenly found themselves in authority when grim fighting commenced had to improvise and overcome odds directly resulting from this parsimony. But today we live in an era of cold wars, and the danger of overcomplacency is less. Nevertheless, the need for economy, particularly of manpower, is great. Therefore, now is the time for scrutiny of the systems.

The impact of air strategy and the air war on the land campaign is of very great importance. At the conclusion of the last war many students of military affairs recognized that armies were no longer capable of winning wars on their own. War on land is now, as it never was before, a joint army-air concern. Airfields require armies to cover them; ground must be fought for and held to provide depth to radar locating devices.

Even a temporary defeat of air forces in the air battle is a military disaster. Any failure of ground forces to fulfill their mission has a direct influence on the struggle for air superiority. Plans become combined plans and the conduct of operations a combined affair. The air arm has deepened the battlefield by hundreds of miles. Generalship which fails to take full cognizance of this simple fact, or ability which fails to match itself to the complex problems which are its natural corollary, is not generalship at all.

The development of scientific weapons and the impact of this on equipment, organization, and conduct of battle makes a knowledge and understanding of these things essential to commanders of the future. The difficulty is in determining the extent to which this knowledge is essential. Certainly there is not half enough of it today, and looking into the future, commanders must have a great deal more scientific and technical knowledge than they have ever thought necessary in the past.

A tactical sense is essential to a general —almost a first essential. Nothing succeeds like success, and successful generals always are followed even if they are not necessarily remarkable for their popularity. A tactical sense is not easy to define, but it includes a knowledge of ground and what advantages ground can give. Ground to a general must be like the tide to a sailor.

Wellington's brilliant use of ground and his selection of his positions at Torres Vedras and at Waterloo are but two ex-

amples of this genius. Montgomery's use of ground in the defense battle of Alam Halfa is a modern classic. Ability to size up and make the fullest use of ground to further the plan can be acquired only by study and training. Brute force, weight of artillery, and airpower make for victory, but at a bloody cost and even then inconclusively; the campaign in France in the 1914-18 war was an example of this.

International Command

Grand alliances are here and here to stay. Intercontinental air warfare and the long-range ballistic rocket are two military reasons for the development of grand alliances. Whereas in the past religious difficulties have tended to drive nations into groups for defense or otherwise, the fear of aggression and the fact of aggression generally have been the main forces driving smaller nations into wartime alliances.

Today, the conflict of ideologies and the fear of aggression have forced nations into alliances or pacts, and a degree of integration has been achieved in peacetime which no other age has witnessed. The problems and cost of large-scale production of immensely complicated equipment and engines of war have developed an international interdependence of unprecedented size.

Thus whereas in the past generals had to cooperate with their allies in the battlefield, today they have to cooperate in peace. The importance of this must not be overlooked. Today, the success or failure of a general may very justly be in direct relationship to his ability to cooperate with allies. One of his most important tasks is to gain their confidence, and then to retain it. This is a mutual business. As Field Marshal Sir William Slim once said when addressing some British and allied generals, "Never forget that you are an ally yourself."

The importance of a knowledge of foreign languages is a corollary to this: while not essential, it is an unnecessary handicap to be without it. Interpreters are essential if confusion is to be avoided, but the ability of commanders to be able to talk on more personal matters with their allied colleagues is an advantage of great merit.

In the field of politics, too, there are new factors. An army group commander today may find himself in peace exercising a degree of command over forces of several nations. This brings him in contact with delicate problems where tact and a political sense are essential. In the cold war, for example, commanders find themselves confronted by problems so bordering on, and so affected by, the political that unless they possess an understanding of the issues at stake, they may well find themselves advocating or adopting an unreal policy.

Impact of Atomics

Some of the more important impacts of the development of nuclear warfare in both the strategic and tactical fields of warfare also must be considered. The first and outstanding characteristic of the atomic weapon is its immense destructive power. Whereas in the past we have talked of six-inch and eight-inch guns or even larger, and of army groups of artillery counting the number of barrels and of rounds per gun, now we talk of kiloton missiles. A nominal missile of 20 kilotons represents 20,000 tons of TNT. This weight of destructive effort can be released in a few esconds and can be placed with accuracy many hundreds of miles from the point of departure.

Fire plans that previously took days to prepare can be put into effect in so many minutes, and with a degree of ferocity and destructive potential many hundreds, if not thousands, of times greater. Nevertheless, we must not forget that we know how to stand up to devastating destruc-

tion. In the British Army alone on the first day of the Battle of the Somme we had 57,000 casualties.

The implications of the atomic weapons on generalship and on the art of command are, of course, immense and any tendency to understimate them would be folly. They bring into a more poignant relief the relations between command in the air and on land. A frank realization of this may result in indigestion for some whose minds have not yet fully moved with the time, but its truth remains.

Certainly the interplay between both strategic planning and operations and tactical planning and operations, as well as between air and land forces, is infinitely more intimate. The principles of deception, concealment, and surprise take on new life. In the order of factors affecting the construction of any plan they are in the front rank.

There is one very good reason for this and it is not fear. It is that the atomic weapon has one very interesting and important limiting factor—it overkills. It kills or destroys threefold—or even 300-fold. It is within a circle of comparatively limited radius that it utterly destroys by radiation, by heat or burning, and by overpressure or blast. Deception and surprise with their corollary of concealment now come into perspective; this is particularly so in a defensive operation. But in the offensive the element of surprise is no less important.

The telescoping of time will make many of our procedures too slow. Immediate action and reaction will be called for, and a degree of decentralization and broadening of the scope of individual initiative will be essential. Detailed orders must give place to broad instructions in which the subordinate, while left in no doubt as to the commander's intention, is given full range to interpret its execution as the uncertainty and impacts of the battle develop. Concentration in terms of space must give way to concentration in terms of time. This implies a definitely scientific approach to problems of deployment and movement.

Long, tenuous, and crowded lines of communication become vulnerable and will be unsupportable. More than mere lip service must be paid to this. Administrative and logistical generalship take on new forms, calling for imagination and the willingness to take risks.

Conclusion

Generalship today has much to learn from the past. Command is always best when it is direct and personal. It requires great robustness of a man, but it also requires great tactical ability and a full and detailed understanding of those scientific and engineering developments which are so much the hallmark of our time. It requires a broadminded and understanding approach to air warfare of today, and presupposes a complete understanding, not only of air strategy, but of the facts of air-land warfare. It requires an understanding of the staff machine and ability to use it to the hilt, while never letting it get control.

It demands confidence in all levels which postulates the encouragement of initiative. It calls for the determination to control events and not to be controlled by them. It calls for political sagacity, tact, understanding, and a reasonable humility. It calls for patriotic fervor and an international outlook.

The impact of the atomic weapon on the tactical field heightens the necessity for flexibility of outlook, for placing full confidence in subordinates, and for the exercise of personal control when events demand this.

Massive Retaliation, Deterrence, and Brush Fires

Digested by the MILITARY REVIEW from an article by Colonel G. M. C. Sprung in "Canadian Army Journal" January 1957.

HISTORICALLY, statesmen and military thinkers seldom have known precisely what defense forces were essential to the welfare of their countries. Even casual study of the evolution of military arms leaves one with an impression of ceaseless change. Problems of armor and gunpower, bows and pikes, muskets and rifles, sail and steam, machineguns and tanks, aircraft and battleships, and missiles and atomic warheads have followed one another without respite, the newest ideas already warning of changes in arms and forces which have themselves not yet wholly emerged from the haze of controversy with their predecessors.

It is commonplace to observe that our own day continues this pattern and intensifies it. Applied science has gathered itself into a compact ball, and has hurled itself through the technical difficulties of arms development with such success that weapon and tactical concepts which were promising to harden into doctrine following World War II have been shattered into literally meaningless fragments of past experience. Little wonder that our military age, even more than most others, has brought bewilderment to the experts and a haunting insecurity to the minds of the statesmen.

Military Forces

Once again we have had to pose the troubling question: "What kind of military forces are most apt to further the well-being and security of our countries?"

It is now almost a matter of history that during the past decade the obvious answer to this question was held to be: ". . . why naturally, those forces which can employ the largest nuclear weapons."

The reasons for this general agreement were many and lie too far beneath the surface to be probed at this time. It is certain that from Churchill and Montgomery to the editorial writer of the smallest country newspaper, those permitted to be vocal in the matter agreed that the air arm could bring the new weapons most effectively into play and was, therefore, the type of defense force most apt to further the interests of nations.

This conclusion was strengthened (if indeed it was not largely induced) by considering the problem of defending Western Europe against Russia. The balance of forces in this theater was so hopelessly to the disadvantage of the Western Powers that the only answer was to redress the inequality by the use of nuclear weapons. This has been the burden of the NATO strategists.

We will be compelled to use our nuclear power against Russia for the stark reason that we have no other defensive means at hand.

It has been with more than reluctance that Western Nations have questioned this reasoning. One might even suspect that it was at first accepted with relief. "At last," some might have thought, "we have solved the problem of expensive armies—we don't need them."

With the dawning presentiment that the one condition, sufficient in itself to engender a nuclear war, is created by sanctioning the strategy of "nuclear redress," there may be a readier willingness to examine the imbalance of forces in a fresh light. It could be that the future (long-term) course of defense thinking in Europe will be to weigh the advantage of restoring the balance between Russian

forces in Europe and those of the Western Powers. Perhaps the effort of maintaining larger forces, if this lessens the certainty of *any* European war being a *nuclear* war, will appear more tolerable than it did during the initial nuclear craze.

Be this as it may, there are signs abroad that defense problems are receiving a fresh appraisal. The initial nuclear hypnotism is wearing thin, and the eye is clearing for a cold, hard scrutiny of the strategic problems of our time in the light of the full circumstances—including not only nuclear weapons but also many other facts which so far have remained out of focus on the periphery of our minds.

Let us assume for present purposes that force has not yet passed from the international arena, and that the proper forces to maintain are those which are most useful in furthering the interests of nations under the prevailing conditions of international rivalry. It will be agreed that the dominant, but not the only, condition of our generation is the aggressive and expansive Communist idea. William W Kaufman and his associates, in their recent book, *Military Policy and National Security*, start from these assumptions (albeit much more subtly defined) and searchingly study the wisdom of reliance on the strategic air arm as the major military instrument of national policy.

They find it wanting as an answer if taken by itself, although a primary part of any complete answer. Reliance on the strategic air arm forces any nation, as in fact it has already forced the United States, to a policy of "massive retaliation."

Massive Retaliation

What massive retaliation means as a stroke of war is quite clear. What it means as a basis for foreign policy is somewhat less so. Taken at its simplest, a nation which has the military power to drop devastating quantities of thermonuclear weapons on its enemies threatens to do so, if this nation considers itself threatened by any act or policy of other powers. This is alternatively referred to as the "policy of deterrence." (It is clearly merely *nuclear* deterrence, since a balance of *any* type of force must act as a deterrent.)

Whatever brutal sense such an idea might have if all nations in the world were at the mercy of one superpower which alone was able to devastate the lands of its enemies, it has very little discernible sense at all in a world where other powers are equally able to visit devastation on the nation issuing such a threat. If a nuclear stroke of war means that the country launching it will almost certainly suffer the same destruction which it delivers, then the practical meaning of "massive retaliation" (or "nuclear deterrence") is that the nation relying on it is prepared to have tens of millions of its own citizens killed and its own society mangled beyond recognition every time it is seriously displeased with the actions of an unfriendly power abroad.

In his book Mr. Kaufman brings a fine academic pen to bear on an analysis of this doctrine. He examines what he terms its "credibility." If the threat of massive retaliation is to be effective it must, before all else, be believed by other potentially hostile powers. It must be credible that the United States is prepared to see herself blasted into dust in order to prevent, say, Russia or China achieving an advantage in Afghanistan or Taiwan.

The probability of such a monstrous absurdity being accepted by anyone is very low. In consequence, massive retaliation can realistically result in only one of two things: either the hostile power, ignoring the threat, proceeds with aggressive acts and the United States decides not to carry it out, which would be regrettable; or the United States acts as promised, thus unloosing a world war without adequate reason, which would be even more regrettable. In neither case has the "policy"

served the interests of the country originating it.

The nuclear air arm is then by itself not an adequate foundation for national policy. It is scaled for use in a contest with an opposing nuclear air arm, but can have little real effect on the daily struggle for influence and position in the many regions of conflict which exist throughout the world.

Obliteration

History has played us false in this matter. Why should not the most powerful weapon in our entire arsenal also be the most influential? Have not the mounted knight, the capital battleship, and the tank dominated their respective fields at times in the past? Why should this not be true today? Through the first atomic decade most thinkers assumed it would be true. As the real consequences of the use of new weapons have become available for careful appreciation and analysis, however, the certainty of this assumption has been undermined.

Put simply, it has become clear that in a time of "nuclear plenty" any major power will be able to obliterate its enemies—and, in turn, will itself be exposed to obliteration. At this point many thinkers, including Mr. Kaufman, are beginning to sense the fundamental absurdity. The purpose of war is to further the well-being and permanent interests of the nation, or, more precisely, the result of victory must be seen in these terms.

If, however, no nation in possession of its sane faculties can accept the risk of *winning* a nuclear war in the future, if victory no longer has meaning, then nuclear war is no longer a feasible political course of action. It is certainly straining the language to equate obliteration—the fruit of victory—with the well-being and permanent interest of any people, even a people toward whom one may feel hostile.

It appears then that we cannot follow the pattern of history in this respect. We must—a painful necessity—think again.

Absurd as is the idea of warfare with self-obliteration as its end, we must be careful not to recoil too far from the new and horrible weapons. No major power can afford to be, or to belong to an alliance which is, less capable of wreaking destruction than are its potential enemies. If this were to happen, the weaker side could expect to be put under such pressure that its international position would crumble rapidly.

Obliteration as the cost of defeat does make incisive sense. A major power has then no choice but to retain a strong air arm, for such is the price of remaining in the international arena. It is, if you like, the ante in the game, or the capital cost of a national life insurance policy. Sir John Slessor already has likened the nuclear air fleet of our day to the battleships of the Royal Navy during the 19th century. Although not used in action, their mere existence guaranteed a certain reasonableness in the conduct of European affairs.

It is to the credit of Mr. Kaufman and his associates that, although recognizing the "dead end" against which air strategy has run the new weapons, they still recognize that this absurdity pivots on the equal atomic capacity of rival powers. If either side were not to possess this power, then the nuclear air arm would become decisive.

In other words, a major power which wishes to retain its freedom of action in foreign affairs must first of all retain the capacity to annihilate its possible enemies, even though (and here the absurdity threatens to return on us) it has no serious intention of ever doing so.

Foreign Policy

The most powerful weapons then, taken by themselves as a military arm, are not able to sustain a reasonable and reasoning foreign policy in its day to day problems.

The nuclear bluff was called in China, Korea, Indochina, and Hungary and will most certainly be called in other regions in the future. We have had ample time and more to realize that a plan to employ the nuclear redress in Europe and a threat to resort to nuclear retaliation for aggression elsewhere are not going to sustain the interests of the Western Powers. Is it not then time and past the time to consider carefully what military policy *will* counter and throw back the military acts of powers hostile to us?

At this point in the argument, Mr. Kaufman's concept of "limited war" becomes important. It is his merit that he is not distracted by the misleading and vague term "brush fire" war. Those who delude themselves by the facile use of the word "brush fire" appear to argue: "Of course there may be, from time to time, 'local' or 'peripheral' or 'colonial' clashes. We must be prepared to assist in these. Such clashes are, however, but distractions. We must keep our eye fixed on the area of vital importance—the nuclear war."

Mr. Kaufman has investigated the nature of "peripheral clashes" and has, perhaps for the first time, set them in true perspective. Such military actions may well be the most important form of Communist policy. In losing them the West may be losing the only wars that will ever be fought in the future. He points out (and in this he is original) that *the existence of the nuclear arm is the very condition which is most likely to keep limited wars limited.*

The mutual fear of obliteration is the best guarantee that local wars will not be permitted by any major power to involve direct attacks on one another's homeland. Paradoxically, the weapons of unlimited power may restore war, which in the Second World War had begun to assume an irrational quality, to a rational and finite place in the policy of nations.

This train of thought is impressive enough to give one pause. If it is sound, then the nations of the West should study their fighting forces seriously to ensure that they are in balance with this situation. In just which way wars can be limited is a question worthy of much study. Mr. Kaufman can hardly be wrong when he suggests that war must be defined in at least three fundamentals if it is to be limited. It must have a limited political objective; it must be limited in geographical extent; and it must employ a limited range of weapons.

If this much is accepted, then one cannot deny the force of Mr. Kaufman's conclusion: that ground forces, with close air and naval support, are the arm most suited not only to success in limited war, but most suited to success in imposing the "limits."

Mr. Kaufman is writing of and for the United States. In this context he urges that all arms of the forces must be strengthened. Strategic Air Command must continue to improve its capacity to deliver annihilation; the Army and the Navy must improve their capacities to intervene swiftly and effectively in areas of possible action overseas. This is not pleasant advice to lay before the taxpayer, but it follows from the premises and logic of the argument.

As far as the writer knows, Kaufman's *Military Policy and National Security* is the first extensive effort to cull prejudice from reason and illusion from fact in the confusing field of contemporary military problems. Naturally, there will be those who disagree. Now that a certain basis of reasoned opinion has been established, however, as has been done in Mr. Kaufman's book, he who wishes to disagree must do so in kind and not with the sole aid of catchwords and slogans.

Problems of Armored Command

Translated and digested by the MILITARY REVIEW from an article by former General Theodor Busse in "Wehrkunde" (Germany) November 1956.

THE decisive role played by the armored arm in World War II is a self-evident fact. It will be just as decisive in the future if armored command, tactics, organization, and armament are able to meet the altered and augmented requirements that will arise in atomic warfare.

The presumable first phase of a total atomic war—a surprise atomic attack by the assailant on objectives of a military and economic nature followed by a counterattack by the defender—imposes very difficult problems on military command. The greatest of these is that of retaining the substance of the combat forces—of survival itself.

Three principles of success in battle continue to retain their validity in the age of atomic weapons:

1. One cannot be too strong at the point where he seeks a decision. All forces that are to be available must be properly concentrated with respect to time and space, and must cooperate closely.

2. Surprise is half the victory. This can be achieved only by rapid, bold action concealed from the enemy.

3. Only he who retains freedom of initiative will be able to deal his adversary an annihilating blow. Only offensive action can do this decisively, since superiority of command and forces manifests itself most in attack.

The armored arm fulfills these requirements to a high degree. Speed and cross-country mobility render rapid concentration of forces possible even over great distances. The combination of fire and movement ensures quick combat readiness and quick changeover from one method of combat to another.

The principal strength of the armored arm is in attack. Here its strong, mobile firepower, diminution of enemy weapons effects—even of atomic weapons—as the result of armor and speed, as well as its superiority over an unarmored adversary, are of particular value. It devolves upon the art of command to bring out these qualities.

New Problems

The decisive problems with which it will be faced are: the great range and unprecedented destructive effect of atomic weapons; the recent improvement of antitank weapons in ranges, penetrating power, rate of fire, and mobility; the growing significance of aviation and, with it, the increased threat from the air; and the loss in superiority in speed in the face of the general over-all motorization in all armies.

The effects of atomic weapons require a loosening-up of the units far exceeding the former degree in order, as much as possible, to present no paying targets and to reduce losses. On the other hand, the increased effects of antitank means requires great concentration of effort and close collaboration of all weapons in order to achieve success quickly and with minor losses.

As a third point, the air situation at the time of the decision must be at least countered to such a degree that enemy aviation will not be able to intervene in the battle with crushing superiority. Finally, compensation is needed for the increasing loss of absolute superiority in point of speed over the main mass of the adversary's army.

The most and greatest problems will present themselves to the attacker. It is in this direction, therefore, that the following considerations will be oriented.

In the past the concentrated weapons effect lay on that part of the field of battle where the actual attack took place. At the same time, a zone of lesser fire density existed for both adversaries immediately prior to contact, because at this moment weapons of greater dispersion and range could not participate without endangering the friendly forces.

The approach, assembly of forces, movement to battle position, and deployment for action, in general, were accomplished in an area of but slight danger. So far as caution with respect to possible air attack or long-range artillery shelling permitted it, they could move the units in close order formations to the jumpoff position safely, quickly, and without any major friction.

But atomic weapons have created an entirely different situation here. Their greater radius and duration of effect causes both sides to detonate their own atomic weapons as far as possible ahead of their forces or at a corresponding distance to the side of them. The greater ranges of the delivery means of the atomic weapons (planes, rockets, and artillery) render this necessary. Indeed, they make it a point to knock the enemy out at as great a range as possible.

That part of the operational area in which the preparations for the battle are carried out will be most seriously threatened in the future. Also, weapons effects in the attack zone itself will be increased, especially antitank weapons. Thus although the phase of preparation for and initiation of the battle now requires the most extreme dispersion, the battlefield itself more than ever requires a concentration of strength for obtaining success.

The harmonization of these two requirements is one of the main tasks of modern tank command. The questions here pose themselves: in what form is the approach to the adversary to be effected; how and when is the assembly of the forces for the desired decision to be effected; how are they to make ready for the attack; how is the attack itself to be conducted; and how is surprise to be achieved?

The Advance

No argument is needed to establish the fact that close column marches with their rigid schedules and long serials are things of the past. In the future, all movements are to be effected with a breakdown into the smallest possible components. The lower limit of this breakdown or dispersion is constituted by the necessity for a firm-handed command of the whole, for a movement thus dispersed requires breadth and depth. The upper limit is determined by the over-all space available and by the troop units that have to move in it.

In addition, the necessity for taking up an assigned front for combat restricts the breadth of the moving force, and the requirement for economy of time when moving up into position for combat effects the depth of the movement. The problem is to determine the degree of dispersion best suited for each particular situation.

The march must become a steady forward flow in the smallest possible groupments within the corridor of the movement, interrupted only by necessary technical halts, shorter or longer rests—here too requiring dispersions—with the aim in view of passing over the most threatened zone as quickly as possible.

This method of movement offers the greatest security with respect to atomic effects and threat from the air. On one hand it avoids the creation of paying mass targets; on the other hand it reduces losses. It has its weaknesses also.

Formations that are excessively broken up in this way are very vulnerable to surprise enemy attacks. In their dispersed condition they run the risk of being overrun by the enemy. In addition to the obvious need for reconnaissance, they also need adequate security.

At greater distances from the enemy, they should be thrown forward in a long leap, a mission for which airborne forces particularly are suited. As the enemy is approached, the security waves—engaged in leapfrog fashion—must make shorter moves and stem from the armored forces themselves. Echeloned security detachments assume this task on open wings and flanks. In addition to this security of the over-all corridor of movement of the formation, each independent march group must assure its own close-in security.

The road network will by no means suffice for a movement that is so extremely broken up. Some of the forces will have to march off the roads. This means area marching in a more dispersed form than hitherto known.

In addition, narrow passes (bridges and villages) repeatedly will oblige forces pushing forward alongside one another to fall into column temporarily. When it is considered that, for the purpose of concealment, nighttime will be employed largely for movements, it becomes apparent that greater security will be obtained only at the cost of speed. This danger can be eliminated only by great skill on the part of command.

Command

Thorough study of maps and aerial photographs, as well as early and extended reconnaissance of the terrain, constitute the foundation for the undertaking and execution of all march movements. On this basis the commander will decide whether we must seek the necessary dispersion more in breadth, depth, or equally in both directions. Only rarely will conditions be so favorable that the relationship of breadth to depth can conform to the requirements for rapid combat readiness.

Farther from the enemy—in the interest of rapid progress and the saving of the vehicles—depth must have precedence in the employment of the road network. Closer to the enemy there must be a continual increase in breadth even at the expense of a slower advance.

Only where the situation and time permit an advance from one terrain cover to another by very small detachments echeloned in time will larger formations be able to continue on the march in daylight.

Approach

Intuition always has been required for determining the correct moment for the assumption of the attack formation. The commander is faced with the decision of when to abandon the safest form with respect to atomic effect and go over to the proper concentration of forces in view of mission, situation, and enemy strength.

At the corps level of command this requires engagement of the divisions in such a manner that when they clash with the enemy they will have the combat breadths proper for the attainment of the combat objective. At the divisional level a closer concentration of the forces in corresponding group will be necesary in order to have them ready for combat at all times.

Ground zero point of heavy and medium atomic weapons in war of movement could hardly be brought closer than six miles from one's own troops. At about this point, therefore, is the boundary beyond which one could no longer count on the use of any but tactical atomic weapons. For this reason the necessities for the coming battle may have precedence over security against atomic devices. The overall situation on the ground and in the air, judgment of the atomic situation, readiness of decision, and temerity of the commander will in each case decisively influence the "where," "when," and "how."

In approaching the enemy, in addition to the effects of his aviation and long-range weapons, one also will have to deal with his tactical atomic weapons. This is the task of the divisional and lower commands as soon as the divisions are squeezed into a more narrowly bounded disposition.

As tests have shown, tanks are relatively invulnerable to tactical atomic weapons. Armored forces, therefore, except for somewhat dispersed forms, will be able to move and attack in the latter part of the approach march and on the field of battle approximately in their former manner.

Before we go into the question of the initiation of the battle and its conduct, a word must be spoken concerning the command situation within the division and the structure of the latter. There is no need to state that the modern armored division must be more easily handled and more flexible than the old type of division. Likewise, no proof is needed that its present more dispersed disposition in movement and in combat renders command much more difficult than formerly.

The operational unit will have to continue to be the division. It is the fixed quantity for the deliberations and calculations of strength of the superior command. It will be associated with the next higher unit in accordance with the requirements of situation and intention. In time of peace and even in the first phase of a future war, fixed, uniformly organized corps formations may be planned. In the long run this will not in the least alter the fact that it is division-wise that army units are reinforced or weakened as the case may be. Thus the division, in spite of all reorganization, will continue to be of a size requiring skillful subdivision in order to be able to cope with modern conditions.

The regiment as the highest unit of the individual arms branches is outmoded as the next lower command unit. With a few exceptions it has never fought in its established form but, as a rule, has needed the attachment of other arms. In addition to combat teams, the division staff will exercise direct command over the regular division troops unless, for example, they are placed under special staffs for major movements or assigned to combat teams during marches.

If we see in the combat team the next regular subdivision of the division, it also must be amenable to firm and flexible command. It will not, therefore, be individual battalions, or even companies that will roll over the terrain, but correspondingly organized combat teams which will be led forward.

It is not possible to give theoretical values for the dispersion. Many factors such as terrain, conditions of visibility, technical status, and equipment, as well as the degree of training of commanders and forces, exert an influence. Thoroughgoing experiments with troop units will have to establish norms in order to provide commanders with the necessary basis for training and use in actual war.

Initiation of Battle

During the phase of the approach the superior and lower commands will roughly decide the grouping of the forces for the coming battle. The organization chosen largely determines whether the approach from depth is to be accomplished by adjoining forces on line with the central unit or in echelon. The advantages and the disadvantages of both methods are sufficiently well-known.

If enemy strength, disposition, and terrain conditions are still very uncertain, the commander will forcibly secure clarification of these points by combat. To this end, the units of the first wave will be committed so widely dispersed that the point of main effort often can be formed by reserve units in an enveloping maneuver.

If the commander has a sufficiently clear picture of the enemy and the terrain, he will engage the main body of his forces from the very beginning in close concentration in the direction in which he hopes to force a decision at the first attack. To decide where audacity is in place or where caution is in order, especially in border-

line cases, requires true leadership and great wisdom of a commander.

As a further decision, there is the question—providing this decision is not forestalled by an unanticipated clash with the enemy—of whether there should be an immediate passover to combat from the march or if time for deployment should first be taken. The armored unit is especially suited for immediate entry into combat from the march because of the happy combination of fire and movement in the case of the armored forces and because of its flexibility.

In meeting engagements, immediate entry into combat from the march formation will be normal because it is most likely to lead to surprise of the enemy. For an adversary who has the advantage from the standpoint of preparedness for combat, it holds promises of success providing the attack so surprises him with respect to place, time, intensity, and speed that he is not able to get his entire defense strength into action.

In the case of an adversary who is determined to defend himself and who is ready, there generally will have to be a deployment for the attack. This applies equally to enemy forces consisting mainly of either armor or infantry. The presence and extent of enemy antitank means and minefields will influence the use of the armored arm decisively.

The atomic danger is augmented while deploying for the attack because the troops remain longer in one place, and rapid movement as a mitigating means cannot be considered. Dispersion in advance and approach also must be restricted, or the forces will be too broken up for the attack. Nevertheless, it will be necessary to disperse them more than heretofore.

The correct extent of dispersion will have to be determined by experimentation. Furthermore, protection, even if only the most primitive, must be found immediately or provided in the assembly area for both men and weapons against pressure, heat, and fire effect as well as the gamma rays and radioactive fallout. Finally, deployment for the attack must be made as short as possible.

Summarizing, speed in movement and fire-readiness must be exploited fully by command, and combat will be entered with a flying start or after only a short halt for deployment if terrain and situation make this at all possible. A good opportunity also is presented here to surprise the adversary. An intuitively sure feeling for the situation, capacity for decision, speed of action, and audacity on the part of the commander are prerequisites for success.

Combat

The main combat power of armored formations resides in their tanks. It is the task of all other arms to help them forward in the proper direction; the assurance of their collaboration to this end is the task of the command. The tank, supported by the heavy weapons, particularly affects the action because of its high speed, mobility, and the great power of penetration of its main weapon.

On the field of battle of the division and in the various sectors of an attack under differing conditions, the decision as to whether the attack is to be conducted with the tanks in the lead, attacking after the infantry, or with tanks and armored infantry attacking together is largely incumbent on the commander of the combat team. He must adapt the combat method skillfully to the situation of the moment in order to reach the objective assigned to him as quickly and with as few losses as possible.

The commander belongs far forward in combat. Thus he will be able to survey the field of battle early and often. He will intervene personally where the situation requires. He must not, however, allow himself to be tempted to engage in fighting

here and there indiscriminately with individual detachments.

Temporary separation from his staff cannot be avoided under such circumstances. Contact with the operations section, whose place also is far forward, must be maintained in order not to lose the over-all picture of the fighting and to retain over-all direction firmly in hand. This applies in the same way to the corps commander. His command post will have to be more fixed in the major framework than that of a division.

As soon as the two adversaries are engaged with one another, the atomic danger vanishes with respect to the field of combat. It continues to exist, however, for their rear areas and for the more distant portions of the operations area.

Air-Ground Action

The last war showed that ground operations in accordance with previously established plans are possible only when enemy aviation can be hindered from decisive intervention in it. Whether success will attend the efforts to establish one's own air superiority in a few initial battles, as was the case with the Germans in World War II with respect to Poland, France, and also Russia, seems quite doubtful. It will require a fairly long contest between the two air forces to obtain a certain degree of superiority on the one side.

It is quite questionable also whether this superiority will be so great that the adversary can no longer intervene effectively in the operations of the armies. It will likely be necessary in close cooperation between army units—in this case armored formation and pursuit aviation—to prevent enemy aviation from effective intervention in the operations on the ground where the decision is being sought at a given time. A close coupling of armored formations and pursuit units is indispensable for this purpose.

The combat of enemy aviation from the ground requires that the armored formation have antiaircraft weapons at its disposal. Their engagement, in accordance with the situation, is a matter that pertains to the armored command. Regulation by coordinated, higher antiaircraft staffs in the framework of the entire antiaircraft network cannot take care of the rapidly changing situations of the armored formation.

The effective support by aviation is a prerequisite for overwhelming victory. The rapid development of combat operations and the rapid changes of situation in the case of the armored formations make cooperation with aviation difficult. In the past this was regulated, in general, by a knowledge of objectives, time of attack, and manner of attack.

The danger in such a method is that during the time required for the request for support and the issuing of orders and their execution the situation will have changed before the air attack becomes effective. This can be avoided in the future only if the commander who conducts the air attack is in direct and continuous contact with the ground commander he is supporting.

Mobility

Increasing motorization renders all portions of the army equally mobile. The nucleus of the army of the presumed adversary is composed of powerful, fully motorized formations whose number is being constantly increased and against which the decision will have to be won. We are thus again approaching the situation which prevailed during and before World War I—that is, the major parts of all armies operated with equal speed. Preponderance in this respect as a decisive factor for victory—such as existed on the part of the German armored formations during the first part of World War II—no longer exists.

The tank is able to pass over contaminated terrain very quickly after an atomic explosion. Viewed from the standpoint of

the atomic weapon, this gives it superiority in point of speed. But this advantage can be exploited fully by the armored formation only if the same protection against atomic effects exists for all its troops.

Beginnings in cooperation between airborne and armored units were seen in World War II. The coupling of vertical envelopment with the employment of armor in which even entire armored units will be thrown into the fight by the use of air transportation will ensure surprise and superiority in point of speed if the engagement is made at the proper time at the decisive point.

Communications

The armored command will be able to solve its new and difficult problems only if it has at its disposal suitable command communication means. Radio is of the greatest significance in this field.

It is interesting to note that the radio traffic of the armored units has heretofore possessed such unmistakable characteristics that as soon as radio silence was lifted, the enemy listening service was able to recognize it very quickly and unmistakably and to locate it.

The countermeasures employed have been to maintain radio silence as long as possible or to make use of other means for command. These latter (visual signals, messengers, liaison planes, and wire connections) are no longer practical with the great dispersion employed while still a long way from the enemy.

The same requirement is to be stressed with reference to the field of reconnaissance. Not only does the scout on the ground (reconnaissance tank) and in the air (reconnaissance plane) have need of constant exchange of information, but also the lower and middle commands must be able to hear the results of reconnaissance without relay through higher staffs. Such a procedure would create an important foundation for rapid operation in conformity with the situation and, if one had the advantage over the enemy in this regard, it also would provide superiority in speed.

Summary

Without discarding anything that has been tried and tested, many important innovations are necessary for meeting the requirements of the future. They concern first, the proper selection and schooling of commanders, the training of the troops, and the close coupling of armored and air formations in peacetime schooling.

Further, the strength and organization of the units must render extensive dispersal possible without at the same time making command impossible.

Finally, they comprise technical innovations in the matter of armament (among other things, fire-readiness on the part of all weapons in as short a time as possible); vehicles (speed, cross-country capability, and susceptibility to atomic effects); and communication means. A great deal of experimentation and technical development will be necessary to find the most suitable solution.

But it appears certain that the armored arm, if rapidly and flexibly led by capable and spirited commanders, will retain its battle-deciding role in the future.

We must stay alert to the fact that undue reliance on one weapon or preparation for only one kind of warfare simply invites an enemy to resort to another.

President Dwight D. Eisenhower

The Experiences of the War in Russia

Translated and digested by the MILITARY REVIEW from an article by former General Heinz Guderian in "Revue Militaire Suisse" (Switzerland) September 1956.

General Heinz Guderian, creator of the German armored arm, obtained decisive successes at the head of large armored units during the first campaigns of the war. Later, Hitler appointed him as chief of the general staff of the ground forces. He enjoyed undisputed authority in German military circles and retained great prestige in other countries. He died in 1954.

This study by General Guderian is an original document for the reader of the French language. It is destined to appear in a work, Balance Sheet of a Lost War, *in which different German authorities will collaborate.*

AFTER the advent of fascism in Italy and national socialism in Germany, it was believed that the new dynamic idea of a free socialism would thenceforth confound the Bolshevik ideology. Its champions, and more particularly Hitler, were so convinced of their power that they believed themselves able to reorganize Europe by force of arms.

Hitler, like his party comrades, rose up violently against those who affirmed the invincibility of the Red Army. This was not, however, the fundamental basis of his decision. His intention was to procure the "vital space" indispensable to the "Great Reich" which he planned to create.

The realization of this design brought him into conflict with the Western Powers. The attempts at a settlement after the Polish Campaign failed. Hitler saw himself forced to attack in the west in the spring of 1940. This offensive ended in a great and rapid success which the German High Command had not expected, and which it neglected to exploit by making all possible use of the speed of movement and shockpower of modern combat. This mistake enabled the English to return the greater part of their forces to their island, sacrificing only heavy matériel.

Having victoriously concluded the French Campaign, Germany then committed another mistake—that of not finishing with England by continuing operations against Gibraltar and, after the seizure of Malta, against Cairo and the Suez Canal. The invasion of the British Isles, Operation *Seelöwe*, was prepared without great enthusiasm and could not be expected to result in a decisive success due to the inadequate means of the navy and Luftwaffe. The German High Command was not ready, either materially or morally, to extend the war against its most redoubtable and powerful adversary.

Thus at the end of the fall of 1940 the idea was conceived of turning eastward and eliminating the Russian danger before having completely done away with the menace from the west. The apparent invincibility of Russia, as confirmed by the memorable defeats of Charles XII and of Napoleon, did not deter Hitler. His confidence had increased enormously after the great successes of the campaigns of 1939 and 1940, and he believed himself able to snatch this victory as quickly as he had brought about the collapse of the west. His military counselors allowed themselves to be deluded both with respect to the actual strength of their adversaries and the strategic qualities of their commander in chief.

Considerations which are difficult to understand led to the conception of a "blitz war" similar to the one which had given such positive results in Poland and in

France, and to the anticipation of a period of eight to 10 weeks for the fall of the Soviet Union—repeating the error which was fatal for Napoleon. Hitler counted on reducing the Russian military strength before the arrival of bad weather, believing that he could then content himself with occupying a line of strong points and return 60 to 80 divisions to Germany.

In consequence of this, the armament industry was reorganized, especially at the expense of the Luftwaffe. Preparations were limited to those of a summer campaign which was to bring about the collapse of the political power of the Bolsheviks and the disintegration of the country into a number of small states.

This way of looking at the matter was supported by the outcome—not a very encouraging one for the Soviet Union—of the war against Finland (October 1939 to March 1940) which contributed in a large degree to an unfavorable and erroneous judgment with regard to the future adversary.

Hitler's ideas, this time shared by the High Command, might have been realized if the operation had begun sufficiently early in 1941. But two obstacles presented themselves: the unusually wet spring, and the unexpected Balkan Campaign. Thus the battle with the Russian colossus could not be joined until the end of June.

Hitler's initial project consisted of penetrating into Russia with three groups of armies. To the north they were to seize Leningrad, establish contact with our Allies, the Finns, and control the Baltic in order to ensure supply. This would have guaranteed security for the northern flank of the Wehrmacht.

Hitler planned next to turn toward Moscow, the main center of Soviet power. This city, to an even greater degree than Paris for France, presented a military, political, and economic value that could be decisive.

Lastly, they were to occupy the Ukraine on which the abundance of its agricultural and mineral resources conferred exceptional worth.

Broadly speaking, this eastern campaign constituted a pure frontal attack executed by forces very inferior to those of their adversary. Strategic operations of this type rarely have led to success. The only possibility of ameliorating these initial conditions would have consisted of adhering tenaciously to the initial intention: seizure of Leningrad, ensuring contact with the Finns, envelopment of the northern flank of the Russians and, as a consequence, all of their front.

Change of Objective

But Hitler suddenly hesitated before Leningrad and its millions of inhabitants, an objective well within his capabilities. He wavered between continuation of the offensive toward Moscow and the invasion of the Ukraine. Finally, on 22 August 1941, after the crossing of the Berezina at Borisov and the victory of Smolensk, he turned toward the south with very large forces levied from the Central Army Group in order to ensure early conquest of the Ukraine. Although personally incapable of calculating with accuracy the space and the time necessary for such an operation, he would not accept the counsel of his staff. He did not act as Napoleon, who had at least reached Moscow, but more like Charles XII of Sweden who paid so dearly for his change of objective.

The initial plan abandoned, it became clear that Hitler was heading for a winter campaign for which the forces were not prepared. No effort was made to retrieve this fatal error. Hitler believed that he could still reach Moscow before the arrival of cold weather, although the season was already very advanced, and he succeeded in convincing his counselors of the Wehrmacht and of the Army High Command. The campaign continued, therefore, even though it was not possible to

send appreciable reinforcements either to the troops or the Luftwaffe.

No consideration was given to the inevitable attrition produced by an offensive which had required an intensive effort for three months. The vehicles and the automatic weapons suffered enormously from the clouds of dust which arose from the dirt roads. Motor breakdowns were very numerous. The mechanical performance of the tanks and tractors was diminishing steadily. Replacements arrived at a slow trickle. Clothing supplies for the troops, especially shoes, finally ran out. The men, almost entirely without woolen clothing and underwear, faced the winter in a wretched condition.

In spite of the experiences of Charles and Napoleon, the difficulty of penetrating into this country during the wet weather season was not correctly estimated: Hitler imagined that modern techniques would make it possible. Defying the lessons of the past, he affirmed that the willpower of the national Socialist Party and the Wehrmacht alone ought to suffice for bringing the war to a victorious conclusion.

The axis of the advance was, therefore, bent toward the south. During the course of the Battle of Kiev the decision was made to resume the attack on Moscow. Immediately after the conquest of Kiev the German High Command continued to believe in the exhaustion of its adversaries and to imagine that one last effort would achieve the objective in spite of the time lost in the Ukraine.

While the northern wing of the vast front succeeded in maintaining itself on the Volkhov after having waged bloody battles at Tikhvin, and the Southern Group was driving toward Rostov, the Central Group began the attack on Moscow on 2 October and succeeded in occupying the line Orel-Bryansk-Vyazma as well as positions farther northward.

Bogged Down

This time, according to the estimate of the commander in chief of the army, matters went differently than at Minsk and Smolensk. One could risk attacking immediately. He gave the order to take up the pursuit with all the forces available on 7 October. On the 10th the rains began and the Germans became acquainted for the first time with what is called the muddy period.

The offensive of the Central Group "jammed" over all of the vast extent of its front. It was necessary to use the tracked equipment to get the other vehicles out of the mud, and a consequent increase in breakdown of the tracked vehicles resulted.

Very often the troops were some distance from the supply routes and had to be supplied by the Luftwaffe which was incapable of satisfying all needs. Often the planes had to transport fuel supplies, in addition to food and warm clothing whose absence was cruelly felt. Yet all these measures were insufficient.

The troops moved very slowly in the direction of their objective—still a long way off. The resulting loss of time worked to the advantage of the Russians. With the communications hub of Moscow still intact, the Russians were able to bring in reserves from the most remote regions and rush them to threatened points. Thus they produced a number of crises which resulted in further immobilization of the German units.

In the infantry divisions it was the movement of artillery which presented the most insurmountable difficulties. The heavy cannon—almost all horse drawn—sank inextricably in the mud.

On 25 October fresh Soviet troops from Siberia forced large elements of the Central Group to go on the defensive.

The High Command, in spite of all the warnings, paid no heed to the commanders in the field. At the headquarters of

East Prussia they continued to apply plans as if maneuvering with peacetime forces over good summer routes. The chiefs of the German Army snapped their fingers at the lessons of history, believing that by force of will they would be able to handle those situations which their material and moral resources could not surmount. They were persuaded that all that was necessary to achieve their aims in spite of the many obstacles was to exert pressure on the command in the field, and they did not fail to do so.

While the Central Group found itself almost halted by these disastrous conditions, the Southern Group, favored by a more clement temperature and better routes, succeeded in progressing as far as Rostov on the Don, which a Russian counterattack took back from it at the beginning of December.

During these decisive weeks the physical deficiency of the horses, the failure of transportation due to lack of fuel, special oil for the wintertime, snow chains, catalytic stoves for the warming of motors, antifreeze for radiators, and of suitable locomotives for the railroads, coupled with the vast demolitions skillfully carried out by the enemy, were disastrous to the Germans.

The distance which had to be covered after leaving the railway lines, and the delays in getting through the railway centers of Brest-Litovsk and Warsaw presented no unusual difficulties in themselves, but added to the difficulties engendered by the lack of comprehension on the part of the High Command. In the middle of November the average number of trains arriving each day for the entire Central Group was 23, while more than 70 were required.

Russian Winter

The winter came. The first freezes enabled the troops to advance more rapidly over the routes now free of mud. But the picture changed almost immediately, for this winter was abnormally rigorous. The thermometer dropped well below zero at the beginning of December.

Suddenly both horses and motors were lacking at the same time. The transportation of supplies by human pack trains was attempted but it was an inadequate remedy, all out of proportion with the enormous expenditure of personnel that it required. In spite of its efforts the aviation could not satisfy the multiplicity of the needs. Moreover, just at this moment it was necessary to send large detachments to Africa to ward off a crisis that had arisen in this theater of operations.

Due to lack of suitable shelter, the troops often had to bivouac in the open. The scarcity of supplies deprived the men of warm meals and cut them off from tobacco and chocolate. But even worse was the lack of clothing suitable for the atrocious Russian winter. Losses from this were greater than those due to enemy action. The combat forces dwindled with alarming rapidity and with a disastrous effect on morale. Excellent soldiers who had thus far been stoical began to doubt the command and to criticize it.

The methods of command underwent no change even though the campaign had not been terminated in the fall as had been anticipated; the entire army of the east had been engaged continually in order to maintain the war of movement; and the cold was inflicting heavier and heavier losses.

Poorly nourished, miserably clothed, and deplorably sheltered, the soldiers lost almost all their capacity for combat. But the High Command still refused to recognize this situation. There is no need to seek any further for the cause of failure of this last offensive.

Other difficulties materialized during the course of this year of 1941, and as a result the command was faced with new problems. The vast extension of the for-

ested and marshy rear territories enabled the Russians to organize bands of guerrilla fighters. These irregulars, commanded by cadres brought in by air, were composed of escaped prisoners of war and inhabitants who had revolted or who were desirous of escaping forced labor.

The action of these bands was felt more and more in the rear areas. They attacked isolated soldiers and vehicles, and sabotaged bridges, railways, and other important objects, forcing defense measures of increasing amplitude. It was necessary to engage more and more troops to ensure freedom of traffic and supply back of the front. It was impossible to hide the fact that the ill-considered levies of workers, often effected on a compulsory basis, contributed toward multiplying the partisans and toward giving their operations a more violent character.

During the advance of 1941 the German troops did not suffer from this, but with the prolongation of the war and the increase in the intensity of the fighting, the action of the partisans did not spare even the frontline combatants.

The severe winter of 1941-42 was followed by a muddy spring which blocked movements and delayed the beginning of the offensive operations.

The 1942 Offensive

In the spring of 1942 the German Command found itself faced with the major decision of continuing on the defensive or attempting to retain the offensive character of the war. By adopting the first solution, the defeat of 1941 would have been admitted and would have revealed the hopelessness of concluding the hostilities victoriously. In addition, this was the last year that the main body of the German armies could be engaged offensively without having to fear an immediate intervention on the part of the Western Powers. But how could the Germans stage a victorious attack with such reduced forces on a front of 1,800 miles?

It was apparently necessary to go on the defensive over the greater part of this immense distance. It was obvious that an offensive would succeed only if all the mobile units and the best divisions of infantry were fully engaged against the most important objective. Decision was facilitated by the entrance into the line of 35 Italian, Romanian, and Hungarian divisions even though their armament was inadequate and they did not possess any experience on the Russian front. In spite of their lack of training, if these fresh troops had been mixed with the German frontline troops their employment probably would have been a success. But it was decided to employ them separately in adjoining sectors—first along the Donets, and afterward on the Don. This really was nothing more than an invitation to the Russians to choose these inexperienced formations as a target.

The German High Command decided to attack in the south, mostly for economic reasons. The idea was to seize the oil wells of the Caucasus and Caspian regions as well as of the rich agricultural and industrial regions of the eastern Ukraine.

Five German armies, two Romanian, one Italian, and one Hungarian army attacked on 28 June 1942. The axis of the main effort, beginning at Isium and Kharkov, turned first toward the east. The forces were organized in two groups of armies of which Group A, in the south, was to reach the lower Don, and Group B, to the north, was to attempt to reach the Volga over a broad front on both sides of Stalingrad. This time again it was to be a frontal attack.

But the left wing was pinned down very quickly by powerful resistance and, aside from a few bridgeheads, was not able to cross the Don. The Russians did not permit themselves to be enveloped, but yielded ground systematically, maintaining a continuous front. They suffered heavy losses but were not crushed.

The two army groups then followed diverging directions. Hitler decided to continue the offensive of Group A in the direction of the oilfields of the Caucasus, while Group B would move toward Stalingrad to cut the Volga which was supposed to be of great importance as a communication artery.

The front of the two army groups, which began with a length of 300 miles between Taganrog and Kursk, was extended to nearly 1,200 miles between Tuapse, the Elbruz, Mostok, Elista, Stalingrad, and Voronezh. The zone of operations was 450 miles in depth. Supply soon ran up against insuperable difficulties.

This separation of the axes of advance resulted in General Friedrich Paulus' Sixth Army assuming the form of a very pointed wedge, reinforced by a few divisions in the important Stalingrad sector. The point of this wedge actually reached the city, but the remainder of the forces could not join the battle while the flanks were insufficiently covered. Hitler would not permit a halt to consolidate this weak feature.

The catastrophe of Stalingrad began on 19 November 1942 when the Russians scattered the Third Romanian Army northwest of Stalingrad. Simultaneously, the front of the Fourth Romanian Army, south of the city, was broken. Stalingrad was encircled on 22 November. Paulus wanted to break out of this encirclement and escape westward. Hitler forbade him, supported in this decision by the promise of Hermann Göring to carry 500 tons of provisions daily by air to the encircled army. As a matter of fact, the Luftwaffe rarely carried in 100 tons per day. This lack of supplies determined the fate of the Sixth Army when the attempt at liberation by Von Manstein failed.

Of this somber chapter of German military history it must be noted that in the vast expanses of the Eastern theater of operations, where the ground communications were very vulnerable, only a very powerful air transport force can ensure the supply of the troops. Operations as hazardous as that of Stalingrad depend, above all, on such a capability. Furthermore, air transportation requires the cover of a powerful fighter force. At this time such no longer existed.

In December 1942 the Russians defeated the Fourth Romanian Army, which made it necessary to interrupt all attempts at relief and to evacuate the Caucasus region. The Sixth Army capitulated on 30 January 1943. Of the 265,000 men it counted the day of the encirclement, around 90,000 had been made prisoner and more than 100,000 had been killed. General Ewald von Kleist succeeded with many difficulties in saving Army Group A by recrossing the Don at the end of a retreat begun at the beginning of January.

At the end of this same month it was necessary likewise to abandon the former Voronezh attack front.

The campaign of 1942 ended in serious defeat. Defense became necessary over the entire Eastern Front.

Defense After 1943

The spaciousness of the conquered territories favored the German forces. It was, however, easy to foresee that this advantage would end one day and it was necessary to give thought to the construction of the withdrawal lines and the fortified positions with which the German Command had not yet concerned itself. The generals of the army carried the matter to Hitler in an increasingly pressing manner. But the latter felt that they were proposing these withdrawal lines for the purpose of retiring to them as soon as they were completed and he forbade any such action.

The absence of organized positions threatened to transform every Russian penetration into a decisive defeat, and the lack of reserves aggravated this threat.

It was felt even more keenly when it became necessary in 1943 to keep all German forces alerted through fear of an imminent landing by the Western Powers, for where could the High Command secure the forces needed in the West, except from the Eastern Front?

All the disadvantages of a war on two fronts manifested themselves with growing acuity from that time on. After the loss of Africa the landing of the Allies in Italy gave birth to a third front. The enemy's airbases became dangerously close to Germany already hard-pressed on every side.

In the face of these difficulties the chief of the general staff wished to resume the initiative in the operations on the Eastern Front in order to reduce the offensive power of the Russian adversary. He proposed to Hitler to attack the enemy's Kursk salient. The Führer hesitated but finally agreed.

The attack failed, with irreparable losses. The initiative passed definitively over to the adversary.

From this moment on there was nothing but withdrawals, but as they withdrew the fighting units found no organized positions ready to receive them. The supply stocks in the rear were lost for the greater part. The resistance of the frontline forces became more and more undependable. Aviation and armored forces suffered greatly through lack of replacement parts. Material inferiority became increasingly apparent from then on. Lack of fuel paralyzed the mobility of both armor and air and it became almost impossible to train replacement personnel for them.

The violence of this fighting in the east impeded the organization of the defense against the landing which threatened in the west. At the time of the Allied landing in the spring of 1944 the Russians were vigorously on the offensive.

The more critical the situation became, the more inflexible became the attitude of the German Command. The advanced positions had to be defended foot by foot, until encirclement. Heavy losses in personnel and matériel were suffered as a result. It was not until the fall of 1944 that the chief of the general staff wrested from Hitler authorization to construct withdrawal positions and to fit out the ancient eastern fortifications of Germany. But it was much too late.

The new lines could be provided only with a very inadequate allotment of personnel and matériel. The defensive positions thus created proved their worth from January 1945 on and slowed down the Russian drive sufficiently to enable the Elbe to be chosen as the line of demarcation between the zones of operation of the Western Allies and the Soviets. Except for that, the outcome of the war doubtlessly would have been a catastrophe that could have dealt a death blow to the German race.

The situation on the Eastern Front would have evolved more favorably if Hitler had engaged the forces there which he employed at the time of the Ardennes offensive against the Western Allies. For the future of the German people and the protection of their territory, the most redoubtable adversary was the Soviet.

Summary

Between the two world conflicts the Soviet Union developed, both militarily and industrially, the vast expanses which extend to the shores of the Arctic Ocean and the Pacific. In the future this development probably will continue to increase, the resources of her soil will be more largely exploited, and her land, sea, and aerial communications will be very considerably increased.

The Western armies, thus far, have launched nothing but frontal and almost exclusively land attacks against Russia. All of them have failed. Air and naval

forces could furnish better possibilities to an assailant in control of the seas, if they acted in conjunction with sufficient ground forces not used solely in a frontal attack, but in an outflanking movement in the direction of the principal objective.

As a rule the outcome of military operations is hard to foresee, and this is particularly the case in Russia. No plan, however well conceived, can be relied upon to ensure the success of a "blitz war" in this country.

It is a mistake to hold an adversary in contempt. This is especially true when dealing with the Russians. Weapons and other means of warfare must be adapted to the special character of the Eastern theater of operations. The same is true of the clothing and equipment of the soldiers.

In the era of aerial and submarine warfare it is more than ever important to possess perfectly secure bases. They must be well fortified, stocked, and equipped with repair facilities of all types.

The Russian soldier always has shown himself to be a tenacious combatant of great endurance. The Soviet High Command has given proof of remarkable strategic capabilities during the course of a conflict. The chiefs of the Red Army and their troops possess very modern training and very high morale. Both the Russian generals and soldiers have proved their ability to obey—even in the worst situations of 1941 they never abandoned one another. Their combativity is a historical fact. Soldiers must be trained who are not inferior to them in this regard. Any negligence in this matter could be followed by the gravest of consequences.

In order to light and maintain the flame of patriotism, the Soviets have judged it necessary to revive ancient traditions and make use of great historical examples. It is difficult to see why other nations should cast aside the annals of their past in favor of ideas which have not yet proved their worth.

Camouflage in Battle

Digested by the MILITARY REVIEW from a copyrighted article by Major G. Narayanan in "The Journal of the Institution of Military Engineers" (India) April 1955.

The art of camouflage, though continuously practiced in nature, plays no part in the normal life of man. Only when beset by fear does mankind seek its protection. When war breaks out, the secrets of this art have to be rediscovered. Through camouflage, concealment is achieved and in turn surprise.

—Lieutenant General Sir John Whitley

CAMOUFLAGE is an art, and to achieve perfection training is vital. During the last war this was a job that fell to the lot of the engineers and it is more than certain that camouflage will continue to be an engineer responsibility in the event of a future war. There was a "Camouflage School" in India during the last war which taught the various methods of achieving camouflage in battle. This school was closed after World War II, but experiences in the Korean conflict have proved beyond any doubt the value of continued instruction on camouflage in battle.

Camouflage means any and every means of deceiving the enemy and deception in warfare is as old as history. As early as 500 B. C. the Chinese military writer Sun Tzu in his book, *The Art of War*, stated:

All warfare is based on deception. Hence when we are able to attack we must seem unable; when maneuvering our forces, we must seem inactive. When we are near, we must make the enemy believe that we

are far away. When we are far away, we must make him believe we are near.

Deceptive operations aim at creating a situation for which the enemy is unprepared, and thus achieve surprise which is the most deadly of all weapons and the battle-winning principle of war. Such operations have been practiced by commanders since antiquity. Even though the technique of these operations has undergone development through centuries of warfare, the principles remain applicable in modern combat.

The rapid development of aircraft under the stimulus of the European War of 1914-18 introduced a new factor in warfare, namely the power to reconnoiter and photograph the enemy's dispositions far behind the battlefront. As a countermeasure each army organized a "camouflage" service. This was confined mainly to the concealment of positions within gun range, because as yet the power of aircraft to attack ground installations was negligible. In subsequent years the offensive power of aircraft increased to such an extent as to bring the entire warring country's industry, communications, and populations within range of attack from the air, and it, therefore, became necessary to extend the scope of camouflage accordingly.

This brought about a change in the conception of camouflage to include, not only the passive concealment of installations and major fieldworks against observation and photography, but also the active deception of the enemy. Camouflage thus has come to include any and every means of hiding or disguising yourself from the enemy; misleading him as to your position, strength, and intention; and confusing him so that he wastes his blows and falls into your ambush.

The two main means of achieving camouflage in battle are by concealment and display. Concealment includes all means by which visual recognition of military operations and installations is made impossible. Thus movements under cover of darkness, blending with the background in a terrain pattern, hiding under overhead cover or under nets or drapes, disguising objects of military value to look like ones of low or no military value—such as camouflaging tanks with superstructures to look like ordinary vehicles—are all means of concealment.

Displays are organized to focus the enemy's attention so that he is misled as to the real intention. A false military display can be achieved by exhibiting decoys or dummies of real installations or by the clever manipulation and demonstration of skeleton units to give the appearance of forces many times their actual strength.

Of the two main means of achieving camouflage in battle—concealment and displays—display to achieve surprise is comparatively less known. This article aims mainly at dealing with this aspect by taking examples from the history of the last war.

Dummies and Decoys

Display necessarily involves the use of dummies or decoys and has long been practiced. In the First World War, during the Battle of Armageddon in 1918, General Edmund Allenby used 15,000 dummy horses made of straw and blankets.

In the Second World War there are many instances where dummies were used. Dummy guns made of coconut logs were used by the Japanese in the Burma Campaign. The Germans made dummy anti-aircraft guns from iron piping and wood and used them in the Gothic Line in Italy. The Allies made dummy artillery pieces from wood and canvas, cardboard ammunition containers, and unserviceable tires and used them in the desert.

Dummy tanks were used by the Germans in the Hitler Line in Italy. The Japanese, using tarpaulins and a framework of canes, made dummy tanks and em-

ployed them in the Southwest Pacific theater. The British made dummy tanks from prefabricated material and used them in the desert. They also made use of dummy aircraft during the Battle of Tobruk.

Dummy ships have been used by the Allies: first by using dummy landing craft along the North African coast during the cover operation for landings in Sicily, and later by building a dummy coaster on the Normandy beaches.

Dummy installations of all kinds—camps, ammunition dumps, petroleum, oil, and lubricant dumps, engineer dumps, airfields, pipelines, and railheads—were used by the Eighth Army in the desert. The construction of the dummy railhead scheme during the Battle of Cyrenaica is of special interest.

Here a dummy railhead was built about six miles beyond the real installation to afford some measure of protection to the Capuzzo railhead which was vital to the Eighth Army. The dummy was not built as an exact replica, but to simulate a tank delivery point as an extension to the existing railhead. By this construction it was hoped to deceive the enemy into bombing the apparently rather more important, but actually dummy section. This dummy railhead proved highly successful, as it absorbed more than half the total bombload which would otherwise have fallen at the real railhead at Capuzzo.

The use of dummy minefields is fairly well-known. To quote one specific instance, in the Battle of Medenine on 6 March 1943, guns of a British antitank troop were placed on either side of a wadi and a dummy minefield was so sited as to entice the enemy tanks into the wadi. Seventeen enemy tanks duly entered the trap and five leading tanks were destroyed immediately. Dummy Bailey bridges also were used in the last war to deceive the enemy.

Dummy paratroops used prior to the Normandy invasion are of special interest. Navy PD packs (dummy paratroops) were dropped about 100 miles to the west of the main Allied landings to create an airborne diversion. These PD packs were dropped in small groups together with rifle simulators with 20-minute delay actions and pintails (a ground signal projector firing a pyrotechnic signal). This created considerable confusion among the Germans, and the entire German defense was mobilized and numerous German reserves were sent to this zone.

Dummy soldiers have been used extensively to give an atmosphere of reality, and of special significance is their employment in the dummy railhead scheme in the desert.

In most of these cases, dummies used were made locally, either from unserviceable and captured enemy equipment such as guns, unserviceable aircraft, and trucks, or by using local materials with improvisation.

Tactical Role of Dummies

Dummies have been used in a tactical role to perform two functions; either in the protective role as decoys or aggressively, to alter the tactical appearance of a battlefield.

In the protective role it usually takes the form of decoys to distract attention from an important target or vulnerable point. One such example is the dummy railhead scheme in the Western Desert which already has been described. In this role the Germans erected a number of decoys in Germany mainly with the aim of diverting the attention of the Allied bombers from their objectives and inducing them to drop their bombs elsewhere.

Used in the aggressive role, their function is not protective but purely deceptive—to hide the fact that real equipment has been moved elsewhere. They also have been used to produce an apparent threat, for instance dummy armor, guns, and minefields placed to cause the opposing

forces to take the wrong action. The two typical outstanding examples from the last war on the use of decoys in this role are in the Battle of El Alamein by the British Eighth Army and by the US Ninth Army in crossing the Rhine.

Camouflage by Smoke

The use of smokescreens for concealment in the buildup of an army prior to assault was widely practiced during the last war, particularly prior to the assault of river obstacles. The forcing of a river obstacle necessarily involves the buildup of large quantities of engineer supplies and equipment and, when other effective means of concealment cannot be practiced, smoke has been used.

It was the Fifth Army in Italy that first exploited smoke on a large scale in crossing rivers and in building up supplies on the opposite side. For the crossing of the Volturno by the American VI Corps in October 1943, mortars and artillery laid down white phosphorous smokescreens for 36 hours on the north bank of the river held by the Germans, while engineer troops placed smoke pots on the near bank of the river and floating smoke pots in the river itself to screen the bridge sites. Under this smoke cover the VI Corps Engineers set up two pontoon bridges and moved tanks and artillery across to the far shore.

Smoke on a large scale was used during the buildup of supplies and troops on the north bank of the Garigliano River during the six weeks preceding the attack of 11 May 1944. About 15 miles of river valley and about 120 square miles of area on the II Corps front were screened during the period of buildup and of the actual crossing.

Later, in the European theater, smoke was used in river crossing and in exposed locations in numerous cases. During the buildup of engineer materials for the Rhine crossing, the British Second Army discovered that one of its large bridge parks was located within range of enemy artillery. It was too late to move to a new location, or to unload supplies only at night, so the only solution was to screen the activity by smoke. Consequently, from D minus 10 to D-day a smokescreen approximately 20 miles long was maintained to cover the point of the British Second Army and Ninth Army's XVI Corps wherever visibility conditions demanded.

Finally, the greatest smokescreen ever produced was placed up and down the banks of the Rhine for four days for a distance of over 60 miles to cover the reorganization of the 21st Army Group and the crossing of the Rhine on 27 March 1945.

Conclusion

Camouflage is an effective weapon of war which can be used by the commander both in offense and defense. In offense, camouflage aims at operational deception, a classic example of which is available in the Battle of El Alamein. In defense, camouflage mainly aims at concealment and disguise and is used in a protective role. Examples of camouflage in defense are available in the defenses of Tobruk in the Desert campaign, in the defenses of the Winter Line, Gothic Line, and Hitler Line in the Italian campaigns, and in the defenses of the Atlantic Wall and the Siegfried Line in the European campaign of the last war. More recently, the war in Korea has proved beyond doubt the value of camouflage for defensive operations.

The false belief that the scope of camouflage necessarily does restrict itself to mountainous and jungle terrain has been disproved by the results achieved by camouflage in the desert during the last war. Effective camouflage in the initial stages of a war will save valuable equipment and give the breathing space necessary for the production of new and more equipment with which to turn defense into offense.

The Rocket and Military Strategy

Translated and digested by the MILITARY REVIEW from a copyrighted article by Lieutenant Colonel K. Jörgensen in "Norsk Luftmilitaert Tidsskrift" (Norway) December 1956.

It is our solemn obligation, I think, to lift our eyes above the lesser problems that seem to monopolize our time and to discuss and act upon what, by any standard, is the supreme problem before our country and the world.

—Senator Brien McMahon

THE following has not happened, but it might.

The Soviet's Minister of Defense, Marshal Georgi Zhukov had invited all the world's military attachés to a demonstration at a rocket station near Moscow. At the control table in the observation bunker the Marshal stated that he would fire the world's first precision rocket with a range of 1,500 miles. The charge was, to be sure, only an ordinary explosive—TNT—but could be replaced with an atom or hydrogen bomb.

Thereupon Zhukov pressed the firing button and the attachés saw the projectile speed out into space. About 1,500 miles away—in Soviet Central Asia—was assembled another group of observers from the free world. A few minutes later they saw the rocket conclude its journey in a blinding explosion.

In the two observation bunkers hung a large map of the world on which the rocket's reach, from the Soviet Union, was marked in with conspicuous red circles. These arcs included all of West Europe, North Africa, the Middle East, most of South and Southeast Asia, the Philippines, Taiwan, Okinawa, Korea, and Japan. The demonstration was concluded with smiling assurances of Moscow's peaceful intentions.

Some few days later Premier Nikolai Bulganin invited the NATO powers' foreign ministers to a conference in Moscow. At the conference Bulganin indicated that the Soviets might wish to have NATO dissolved and replaced by a new type of defense community. He had in mind a defense arrangement that would not influence the Soviet's aim—world domination. . . .

The above is about the way an American Senator pictured the future in a talk to the United States Senate in February 1956. If by chance he was right, the consequences obviously are of great strategic import, and it might well be worth our while to attempt to determine the degree to which his prophecy is possibly or probably accurate—and what this would mean for the free world.

The Rocket Race

Since the end of World War II there has been intense rivalry between the Soviet Union and the Western allies in the development of new weapons. At the beginning the West was well in the lead with both atom bombs and jet aircraft, but with the passing of time, its lead has been progressively diminishing. Time after time the West has underestimated the Soviet Union. In 1949 the Soviet Union constructed her first atom bomb many years before it was thought she could. In 1953 the Soviet Union tested her first H-bomb, only nine months after the United States first test. And today, the Soviet Union claims to have tested the H-bomb from a plane. The case has been just the same with jet aircraft, and the Russians have been able to get strategic jet bombers into mass production in a length of time that is two years shorter than the West requires for corresponding projects.

In the field of rockets, huge sums and a great deal of work have been expended on the part of the West. Several guided rockets are in mass production and are being delivered to the armed forces, but they are only tactical weapons of short range and relatively low speed. Therefore, defense against them is relatively easy.

Defense against the strategic rocket, also called "the ultimate weapon," is impossible since it moves at from 10 to 20 times the speed of sound and high up in the ionosphere. The development of such rockets of around 1,500 miles or intercontinental range is being given highest priority in the West, but no reliable results have yet been obtained. We can be entirely certain that the interest in rocket weapons is no less in the Soviet Union. In this particular field the Soviets have some of the best German experts from World War II. How far they have progressed it is impossible to say, but since 1955 the Russians have asserted time and again that they are ahead of the Western World in this field. This was specifically mentioned by Khrushchev during his London visit in April 1956.

The situation today is, therefore, that Western experts believe—and the Soviets claim—the Russians already have made successful tests with rockets up to a range of 1,500 miles, but are not yet that far along on the intercontinental rocket. In other words, the Soviet Union may be a little ahead of the West.

Threat to Free World

If the Russians really have made successful tests with rockets of a range of 1,500 miles, the day is not far off when mass production can be started. Well-camouflaged, underground launching stations can be constructed along the Soviet frontier—and the scene described by the Senator will cease to be mere fancy. The moral, political, and strategic consequences of such a situation can be catastrophic for the West if an effective counteraction is not found.

Since the war the people of the free world have looked to the United States as the leading industrial nation of the world and as the leader in every armament race. This naturally has given a certain feeling of security. If this relationship should be reversed, it may be assumed that Western morale would suffer a severe blow, and NATO's best trump card would be lost. Even if the Soviet Union does not make use of her rockets, the mere fact that they exist could be used for political pressure —in the same way that the atom bomb in the possession of the United States exerted an influence during the early postwar period.

Finally, the purely military value of these rockets is clearly apparent when one considers their range which covers all the above-mentioned regions. It is quite true that they do not reach to the United States, but all of the American overseas strategic bomber bases—and NATO's other bases—are easily covered. In other words, all these bases could be leveled in the course of a few minutes after the outbreak of a war, after which the bombers engaged by the West would consist of antiquated *B-36's* and a few *B-52's*. The rocket can, therefore, keep NATO's strategic air forces away from their present bases and up to 5,000 miles away from the heart of the Soviet Union.

The question is to determine what direction the Russian strategic thinking will follow. Normally, it is difficult to obtain anything concrete to build upon, but with regard to this particular subject there has been published a Russian book which, strangely enough, appears to have been overlooked by the Western World. This 27-page book appeared in an edition of 50,000 copies in May 1955 under the title, *Thoughts Concerning Air Strategy*. The publisher is the Soviet Government and the author, Marshal Pavel Zhigarev, Chief of the Soviet Air Force. The main points in the book are as follows:

The strategic bomber is obsolete. It takes too long a time to construct it and it is too costly. In time of war the loss of personnel and of matériel will be unacceptably heavy. Finally, there is the handicap of the enormous, complex, and vulnerable ground organization, to say nothing of the requirements of supply personnel and fuel reserves.

Intercontinental rockets (Russian SIG, corresponding to the American ICBM) can be constructed more rapidly and, at the same time, are simpler and less costly to build. Their speed and range are greater than that of the bomber. Their requirements, in the way of ground personnel and organization, are small, and their launching stations can be built underground and camouflaged.

The Russian book concludes with a critique of United States progress in the field of the rocket, which is indicated as inferior to that of the Soviet Union. The last sentence reads: "The present combat airbases will become bomber graveyards in a future war."

There can be no doubt concerning what strategy the Soviet Union will follow with the development of the rocket. The forebodings of the Western observers seem to be only too well-founded.

The West's Dilemma

The Western Powers today must face the fact squarely that the bomber fields which form the basis of NATO's strategy will, perhaps, in a very few years be worthless or downright hazardous to attempt to retain. The threat of instant retaliatory action which keeps the world in equilibrium is thereby in part eliminated, and the future is insecure if something else does not intervene.

It would seem logical to establish corresponding rocket stations along the Soviet frontier aimed at that country. This solution is not an effective one, however, since while the West defends a large number of regions, widely dispersed geographically and politically independent, the Soviet Union's military might is based entirely on a geographically and politically united land mass and is for this reason far less vulnerable. This means that further research and construction in this field, while always of great significance, simply will not be decisive.

The strategy that will keep the Soviet Union from starting a war, or make a Western victory probable if it does start, must ensure that the bases of the West will be able to survive the beginning of the war and that these bases have such weapons that retaliation can be carried to the entire Soviet area. Such a strategy must include measures for the evacuation of the majority of the presently existing bomber bases concurrently with the Russian development of 1,500-mile rockets. It must be said, in this connection, that security of the bases also may be achieved by making them mobile, either as aircraft carriers or atomic-powered submarines or cruisers with rocket-launching devices.

In order to be able to return the blow, this strategy must, at the same time, implement measures immediately for giving the greatest priority to the further development and increased production of the most modern long-range bombers and the rapid development of the intercontinental rocket. The war-preventive factor in peacetime—or mass retaliatory action in war—can, therefore, be seen to be a combination of bombing aviation and rockets based far from the Soviet Union, but with a range which will cover all of the latter's territory.

That the strategic thinking in the West seems to be following these lines is attested by the interest—to say nothing of the uneasiness—which has been manifested regarding this very question, especially in American legislative and administrative circles. That the Soviets, by frequent claims, keep the question warm naturally diminishes neither interest nor uneasiness.

A New View on Security

Digested by the MILITARY REVIEW from a copyrighted article by Air Marshal Sir R. Victor Goddard in "Air Power" (Great Britain) Spring 1957.

IT IS commonly said that war with modern weapons has become unthinkable. But both the hearer and the speaker of that word, *unthinkable*, most likely do not think about its meaning: the hazy idea that they probably hold about it is that war with modern weapons, like infanticide, is a subject about which it is indecent to think—an obscene subject. Yet while thinking that deprecatory thought with the conventional part of their minds, the rational part of their minds whose business it is to think and reason about anything and everything is trying to think coherently about war with modern weapons.

Since security can no longer be won by virtue of superior strength in arms, the study of war has no proper part in an approach to a sound plan for the maintenance of security and peace. Deterrence is the appropriate study. So inveterate is the habit of discussing security and peace in terms of failure to deter and of active bombing, that something more must be said to clear the real issue.

It seems not to have been generally perceived that what really makes war with modern weapons unthinkable is *not* its appalling obscenity, but the simple fact that nobody can make a system of thinking apply satisfactorily to the immediate consequences of war with modern weapons. For if in the first five minutes things happened that *might* happen, anything could follow, possibly including the profound peace of inaction.

The Graduated Deterrent

At the present time there are schools of thought which seek to bring this disorderly state of unthinkability into some rational order by means of *systems* of one type or another. There is the "graduated deterrent" school which, oversimplified, advocates the thought that the biggest bombs should be held only as deterrents against the biggest wars, medium bombs for what look like being medium wars, and bombs no worse than the Hiroshima type for deterring or quelling lesser disturbances among the relatively uncivilized. There may be a lot of sense in that; at least it does make some type of wars thinkable—until somebody breaks the agreement and behaves in a small war as though it were a big one. It is a plan that would worry the Nasser type of mentality which relies upon the idea that no one is going to risk extinguishing civilization over local issues; that great powers are now rendered puny by great deterrents.

Again, there are many people who evidently do not believe that deterrents will deter, and instead of *making sure* that they will, are earnestly considering how to make war less terrible by excluding anything in the way of weapons that can destroy en masse but are not excluding perfectly *conventional* things like the blockbusters of the Second World War.

A measure of the terribleness of war is the amount by which pleasure in living of those who are engaged is reduced by the actuality of war. Every country that has been engaged in war has endured different degrees of suffering. But the Dark Ages, which lasted for centuries after the little wars which broke the Roman Empire, were terrible in the worst degree for civilization. It was not big weapons that made the effects of those wars terrible. If one is thinking of the terribleness of casualties, one must re-

member that the casualties *in proportion to those engaged and implicated* in all wars subsequent to the crusades have become progressively less as the power of weapons "improved."

The worst war of the past century for casualties and suffering in proportion to those engaged was the Civil War in America. The First World War was worse than the Second, and both were much worse than the existing third world war, mainly cold and bloodless, which we have been having for the past 10 years. When it looks as though we are really getting too near to the actuality of someone dropping a big bomb, everything stops—witness that forgotten Chinese island of Quemoy for which the Americans were prepared to do the worst; witness Dien Bien Phu; witness Suez. Big bombs make for peace between big powers, and for insolence from some little plotting countries backed up by an anxious and ambitious Kremlin. Indeed, it might be that the actuality of nuclear warfare would be sufficient to end a nuclear war as soon as it started simply because it had started that way, much to the surprise and horror of the aggressors.

Humaneness

Another school of thought which needs to be watched, if not quashed is the group of "humane" thinkers who say, "Let us make it quite clear that *we* would never be the first to drop a big bomb."

All that this assertion could make clear is that the aggressors who know what they want also will know that they can go and get it without the aid or hindrance of big bombs. Thus they would probably land us all in a third world war (hot) of a kind as terrible as the Second World War because it would be one of relatively slow destruction before extinction.

The idea that humanity is humane is a myth: it is merely human—and pacifism is born more of fear than of love. Of all the doctrines for ending the monstrosity of war by means of weapons, that of Friedrich Wilhelm Nietzsche surely must be the most humane. He advocated maximum terror.

Prevention of War

Thoughts like those expressed here seem to have led President Eisenhower to perceive that it is mutual fear based on mutual ignorance which makes governments and nations act toward each other as they do. He seems to have been the first statesman in this era to appreciate the fact that consideration of the prevention of war is a matter quite distinct from the consideration of war itself. Almost no one else who has expressed thoughts publicly on the subject of war prevention has ever put forward a proposal which does not involve a chain of thought about war. President Eisenhower knows that all talk about "humanizing" war is phony talk. You can "humanize" things of relatively small military moment. Examples of this are Red Cross conventions, codes for treatment for prisoners of war, and the elimination of certain sacrosanct towns from target areas—for example, Rome. But you cannot forbid, effectively, the use of effective weapons when a belligerent is *in extremis*.

In that connection it is not true that "gas" was barred from use in the last war by any consideration other than self-interest. Both the Germans and the Allies knew that gas was a tricky and unpredictable weapon and that fire and blast were more reliably effective for less effort and complexity. The Germans already had good reason to deplore their introduction of gas in World War I, *not* because of its inhumanity, but simply because the wind has a constant tendency to blow in their faces when they are fighting more westerly enemies. Gas as a weapon could not be relied upon to produce the strategic results required, so it was not used. That fact is now used as evidence that nations at war can be induced to sacrifice effective weapons for humane reasons:

the reasons for restraint always will be those of self-interest, ultimately.

Another common fallacy in the consideration of dangerous international tensions is the popular belief that this or that country wants war in the sense that it wants to be at war. There have been rulers who have regarded (and wanted) war as an instrument of policy. Cases could be quoted where a modern but cynical government actually has wanted to provoke war. But what a government normally wants for itself is *its own way* of settling a problem from which evil consequences are likely to flow if the situation is left unsettled, or if it is settled in another way. War is what no wise government ever *wanted*: even the boldest of stable nations only wants, like Mr. John Foster Dulles recently suggested was a good idea, to go to the *brink* of war—to get what it wants just before any shots are fired. But to be both safe and successful at that game one has to have the right type of face—a face that looks like going all the way *beyond* the brink.

It could be that some armament manufacturers or oil magnates, somewhere, at some time, have wanted war somewhere else, and that they have had an influence in bringing it about. But that is a matter for the other traders to control. The policy of trading countries is to trade. Trading is best done in peace when there is a lot of trade about.

"Open Skies"

So the policy of the West has been to make sure of peace by ensuring that potential enemies are too terrified to risk anything which would make the West shoot. At the same time the West has shown that it is too terrified to make the appropriate faces. Also, the potential enemies of the West have been incapable of seeing Western weapons of *defense* as anything but weapons of *offense* against the East. And, conversely, the same applies to the presumed potential enemies of the East. What, then, are the criteria by which weapons of defense can be distinguished from weapons of offense? Probably there are no criteria.

It seems that President Eisenhower thinks—rightly, I believe—that with regard to defensive or offensive *intentions*, there *are* visible criteria by which the two categories can be distinguished in some significant degree. Those categories could be *alignment* and *scale*. Knowledge of disposition of forces conveys knowledge of strategic intentions. Then—and here is the great advantage of his "Open Skies" plan—if you know what your potential enemy is prepared to do, for better or worse, you may decide not to continue to give the impression that your dispositions give, or not to do what you thought you were prepared to do. But if you do not *know* the other fellow's dispositions, you play poker, and then you may try to call a bluff that is not bluff, and that spells ruin. Surely it was that line of thinking which led President Eisenhower to propound his policy of "Open Skies."

How strange that none of the vast organizations for safeguarding peace through acquiring and publishing military intelligence—governmental, free-lance, and press—should have had recourse to an hour or so of photographic flying, about once a week, over the Sinai Desert near Israel. Pictures so taken at weekly intervals would have displayed the buildup of an unmistakable plan for aggression and would have shown that Colonel Nasser *can* be a man of his word. Had he not said that he meant to destroy Israel? Clearly, he did. And that he was physically poised to do so when the Israelis cut his braces from behind could and should have been shown to the world.

President Eisenhower's proposal at the "Summit Talks" at Geneva was that Russians should be free to take photographs of the United States in American airplanes, and that Americans should do the

same over the USSR in Russian airplanes. The object was to reduce risks of sudden attack from the air. The recent and somewhat reluctant Kremlin counterproposal is that the question of aerial reconnaissance should be considered (and linked with the early departure of foreign forces from European countries) only in regard to an area 500 miles on either side of the line that divides Germany into East and West. That area does not, of course, include the United States and the USSR; it does include 10 other countries, embraces the eastern half of England where the Anglo-American strategic air forces are based, and also includes most of the deployment area of the NATO air and land defenses of northwestern Europe.

President Eisenhower made it clear that in his view secrecy was only a strength for the weak: it was a weakness for the strong. The history of the USSR largely has been a history of internal weakness—hence its addiction to secrecy. No wonder the Kremlin rejects the "Open Skies" plan. All the same, now we have some slight measure of Russian-American agreement that the idea of reconnaissance from the air might be supplied in some new way. Thus a new question has to be considered: if there were to be aerial inspection, would it be a safeguard? In my view the answer could be "yes."

How much trouble we might all have been saved if, before Israel struck, the world had known that in the Sinai Desert, close by the borders of Israel, there already was deployed an armored force of about two divisions and that they were deployed not in the defensive positions designed for the Egyptians by German military advisors, but in the typical alignments of an offensive force poised for attack. The world is entitled to have that type of factual information, for only by such means can it make sound judgments of what is what. That is the kind of thing that President Eisenhower was thinking of when he made his "Open Skies" proposal. And that is the easiest kind of evidence for aerial supervision to provide—simple, high-speed photography from the air.

Already an advanced technology during World War II, air photography has experienced some revolutionary developments in recent years. The techniques for speed, accuracy, perspective, penetration, and discernment have been vastly improved. Air photography is used widely for surveys of all kinds and, in the hands of experts, provides rapidly the most detailed information. Air photography, in conjunction with radio techniques, has opened a new field in geophysical survey work. By air photography the secrets of nature and military secrets are exposed. This is done not so much by the discovery of objects as by the discovery of evidence.

Let me illustrate that point in a simple way. Many years ago I took an aerial photograph of Stonehenge and showed it to an archaeologist. He had told me that the mystery of how those great stones from Wales had got to the site of the ring could be partly explained: they could have been floated by sea and up the Avon River. But how they got overland to the Stonehenge ring from the bed of the Avon was unsolved. In fact, my photograph showed lines which the unaided eye could not see from the air, and these lines on the photograph gave evidence of a canal of thousands of years ago. How much easier, then, to detect evidence of recent military activity.

For instance, consider how the *V-1* plan was disclosed. First, a stray *V-1* landed in Sweden. Where *could* it have come from? Photography proved that it came from Peenemünde and provided a picture of a launching site; that gave the clue to the whole plan which was photographed stage by stage.

There could be deception, but the interpreters of air photographs also are cun-

ning. Dummies are not so easily dummies to them. But why worry too much about deception? Who is trying to deceive whom about what? In the West the object of the NATO powers surely should be to make their agreed policy of the "great deterrent" fully effective. Most of all they should want the world to know the scale of the offensive and defensive might which is available for action; they certainly do want the rest of the world to be really afraid of provoking war. In my view there is great virtue in gradually taking out of military statesmanship the outdated art of poker playing. Surprise is an invaluable stratagem of war. But we are not considering war; we are considering the prevention of war. And, as we have seen recently, military surprises in peacetime can catch public opinion on the wrong foot.

Super Vision

A new idea has come to the top. It will remain only an idea if national leaders see more security in secrecy and deception than in openness and strength. But would it not be logical that out of the small United Nations ground force, which Suez has created, there should evolve a United Nations system of aerial observation? Great ends often have small beginnings. Surely one thing is now clear: *there can be no acceptable supranational force without, first, a supranational means of knowing at firsthand what nations are doing within their own borders. Aggression, like charity, begins at home.*

Recent events give no cause for rejoicing over the strategic wisdom of any great nation or for trusting in the political integrity of any of the embroiled small nations, nor can there be any well-founded faith in the present power of the UN to act effectively with wise impartiality. So nobody is trusting anybody not to be rash with weapons of devastation. While, officially, we continue to trust in the great deterrence of our power to bomb as the final means of modifying policies which might otherwise lead to war, the faint-hearted, "humane" and gentler folk of the West, aided and abetted by our Communists, are undermining the security of all by advocating various types of weakness where only the most ruthlessly determined strength can effectively deter potential enemies from courses that we could, but should not, allow them to pursue.

In a world of mutual distrust the vital supranational need is not for more physical power but for more vision, knowledge, and wisdom. We need to find a less nerve-racking way for maintaining peace than reliance upon our own willingness to say "No," up to the point of death, with catastrophic forces. Rather do we need to see, with supranational eyes, and watch and know the actual truth of what is physically going on behind the frontiers of troubled, troublesome, or trouble-making states. Where there is no *super* vision, nations may perish. If the bane of airpower has been noise and devastation, the boon it can bring can be in terms of watchful vision. This is an activity in which all nations could cooperate easily without sacrifice of power or sovereignty.

BOOKS OF INTEREST TO THE MILITARY READER

SOUND OF THE GUNS. The Story of the American Artillery. By Fairfax Downey. 337 Pages. David McKay Co., Inc., New York. $5.50.

BY LT COL S. M. CASTLE, *QMC*

This is the story of the US Artillery from the battles of the French and Indian Wars in the colonial period to the battles of Korea. Enthusiastically written and scholarly documented, the book is calculated to swell the artilleryman's pride in his calling and to increase his appreciation for the great men of artillery.

General Henry Knox, nominated a colonel and first chief of artillery at 26, assembled his artillery from captured forts, captured field pieces, French donations, and American foundaries and forges, and founded the Springfield Arsenal during the American Revolution.

At Gettysburg, General Henry J. Hunt, chief of artillery for the Army of the Potomac, and called the "greatest American artilleryman," directed the fire of 220 Union guns to break Pickett's charge.

Lieutenant (Brigadier General) Edmund L. Gruber obtained his theme for the artillery song crossing the Zambales Mountains in the Philippines.

Lieutenant (General) Charles P. Summerall marked a spot on the gates of the Imperial City as the point of aim for gunners to blow open the gates for the infantry during the Boxer Rebellion.

There are other vivid battle incidents, details of individual heroes, stories of famed animals who moved the guns, all combining to make this a fascinating history of artillery.

CENTRAL BLUE. The Autobiography of Sir John Slessor, Marshal of the RAF. 709 Pages. Frederick A. Praeger, Inc., New York. $7.50.

BY LT COL DANIEL A. RAYMOND, *CE*

This book is a well-told tale of the growth and utilization of airpower in the British Empire—the story of the RAF from the early days of World War I to date—written in autobiographical form by a not insignificant participant who rose from a flight officer in World War I to chief of air staff in 1950.

Air Marshal Slessor was almost denied a role in this story. Initially turned down for service by the army and navy because of "game" legs, he was finally accepted for the RAF by a lenient examining board which decided his handicap would not prevent his flying. Four months after being commissioned Air Marshal Slessor justified their contention and made air defense history when he went up to attack a Zeppelin over London. From that auspicious beginning he went on to play an ever-increasingly important role.

Most of the story of military operations is generally familiar to all; however, it is presented from a new and different vantage point. Some of the operations discussed are not common knowledge and are most interesting—the air support of the Yugoslav partisans, the futile and costly efforts to supply the ill-fated uprising in Warsaw, and the role of RAF Bomber Command in the antisubmarine warfare.

This book is a fine addition to the growing historical record of World War II and is recommended reading.

BYZANTIUM. Greatness and Decline. By Charles Diehl. Translated from the French by Naomi Walford. 366 Pages. Rutgers University Press, New Brunswick, New Jersey. $8.50.

BY LT COL JEAN P. MESLET, *French Army*

The author of this book, Charles Diehl (1859-1944), was one of the most distinguished French experts on the history of the Byzantine Empire. In this English edition the original opus has been supplemented by illustrations and an introduction and bibliography written by Professor Peter Charanis of Rutgers University.

The work is divided into three general parts and successively covers the highlights of the evolution of Byzantine history between the years 330 and 1453, the elements of power in the civilization, and, finally, the elements of weakness. In a short conclusion, Mr. Diehl shows the influence of Byzantine's heritage in eastern Europe, in the Balkans, and Russia.

This is actually the first of a series of books to follow designed to offer a picture of the thousand years of "the greatest, most active, and most enduring political organism that the world has yet seen."

THE TURN OF THE TIDE. By Arthur Bryant. 624 Pages. Doubleday & Co., Inc., New York. $6.95.

BY COL J. C. WINCHESTER, *British Army*

This is a monumental military work written by a most distinguished British historian and biographer. It is essentially an account, based on the personal diaries of Field Marshal Viscount Alanbrooke, of the part the British war leaders played in planning the Allied strategy of World War II from September 1939 until just before the invasion of Normandy in 1944.

Lord Alanbrooke was chairman of the British Chiefs of Staff Committee throughout most of the war and as such was Sir Winston Churchill's foremost military advisor. In consequence the extracts from his private diaries, supplemented by comments he wrote later and put in their proper historical setting by the author's general explanations and descriptions of events, provide the substance of a book which should be of absorbing interest to students of military and political affairs. The book also gives an insight into the characters, idiosyncrasies, and thoughts of most of the great British and American war leaders.

THE RELATIONS OF NATIONS. By Frederick H. Hartman. 637 Pages. The Macmillan Co., New York. $6.25.

BY LT COL FRANK E. BURDELL, JR., *Inf*

This is a comprehensive, discerning, and, in some respects, challenging treatment of the entire range of international relations from a basic introduction, through a detailed examination of the intricacies of such relations, to a noteworthy survey and discussion of the foreign policies of the leading powers of the world.

The author, a professor at the University of Florida, points up the futility of attempting to understand the relations of nations solely in light of recent or isolated occurrences. Instead, he emphasizes the interplay of historical events and their influence on international affairs.

Mr. Hartman's chapters on the record and analysis of the foreign policy of the United States are among the most interesting in the book, and present ideas with which many "idealistic" readers undoubtedly will take violent issue.

Of particular significance is the author's discussion of such involved matters as security among nations, disarmament, and the balance of power to include the techniques of arriving at, and maintaining, such a balance.

This book will be of considerable interest and value to the newcomer in the field, the scholar, and the military man. Skillfully written in understandable language, it should be added to the reading list of every Army officer.

L'ARMEE BOURGUIGNONNE DE 1465 A 1468. By Major Charles Brusten. 275 Pages. Editions Fr. Van Muysewinkel, Brussels, Belgium.

BY LT COL JEAN P. MESLET, *French Army*

This is a study of a feudal military organization, the "Bourguignonne Army," between the end of the Hundred Years' War and the time of the accomplishment of major military reforms by King Louis XI. It was during this period that scattered independent military forces were unified into a single centralized army under control of the King of France.

The work is divided into three general parts and successively considers organization, armament, and tactics. It contains 52 pages of illustrations which constitute a veritable military museum, in picture form, of the epoch.

The book is a worthwhile contribution to the history of the military art. It is, in fact, a model study of a military system.

DISASTER. A Psychological Essay. By Martha Wolfenstein. 231 Pages. The Free Press, Glencoe, Ill. $4.00.

BY COL CHARLES G. FREDERICKS, *Inf*

With the many urgent actions to be accomplished in disasters, there is little opportunity to observe and record in a systematic manner the emotional behavior of, and the effects upon, the people involved. Recently, however, field teams have been conducting interviews with the victims of peacetime disasters in the United States. The author has skillfully used this gathered material on which to base this psychological study.

For the military, the discussion of attitudes toward threat of disaster, among which is "It can't happen to me," and hence a reluctance to take appropriate precautions, interestingly parallels with the generally prevalent attitude of American soldiers on the battlefield. While considerable space is devoted to the possible underlying causal factors for the behavior demonstrated by victims of disasters, this less significant aspect from the standpoint of average military readers is well worthwhile reading in order to acquire a better appreciation of the behavior patterns themselves to be expected. Moreover, the reader looking for quick answers to eliminate the undesirable behavior among disaster victims is left to provide his own by implication. This in no way reflects on this excellent study. It fully achieves the objectives set by the author.

QUEST FOR A CONTINENT. By Walter Sullivan. 373 Pages. McGraw-Hill Book Co., Inc., New York. $5.50.

BY LT COL HAROLD E. BEATY, *CE*

Quest for a Continent is a timely book prepared by a highly capable news correspondent who has taken part in three recent expeditions to Antarctica. Mr. Sullivan's narrative vividly brings to life this fascinating ice-locked world and the men who venture their lives seeking to conquer it. He has presented material which he has recognized of importance from vast research and personal experience and observation. This data is of value to those who are interested in exploration and who watch the news dispatches from Antarctica.

Mr. Sullivan has treated the early explorations of the Antarctic until 1939 extremely briefly and perhaps with injustices to those who deserve more credit. Yet he has skillfully pointed out the highlights of Antarctic explorations which give the reader some background for the extended coverage of Admiral Byrd's expeditions of 1939-41 and subsequent dates. This book has much useful up-to-date information which contains in one volume a brief of the conquering of a fascinating continent—Antarctica.

BRASSEY'S ANNUAL, 1956. The Armed Forces Year-Book. Edited by Rear Admiral H. G. Thursfield. 438 Pages. The Macmillan Co., New York. $9.50.

BY LT COL WILLIAM D. MCDOWELL, *Inf*

Disraeli is reported to have paid the highest accolade when he said, "The only fault I can find with your statement is that I did not think to say it myself." With only slight revision, the same accolade could be applied to *Brassey's Annual.*

Now in its 67th year, this British triservice volume serves a purpose and fulfills a need that has long been apparent in the United States. It presents the most forward-looking ideas of a number of qualified personages on developments and progress in the field of military science.

The overriding theme of this edition of the standard reference on British defense policy and strategy is that the first principle of armed forces must be wholehearted and sincere interservice cooperation. This volume is concerned largely with the special problems arising from the development of the atomic weapons, supersonic aircraft, and guided missiles. Although it deals with matters primarily from the British point of view, it will be of interest to soldiers of all nations allied with Great Britain in the North Atlantic, Southeast Asia, and Pacific Treaty organizations.

Besides discussing the recent developments in weapons and the vehicles which carry them, geographical areas of especial contemporary interest are brought sharply into focus. For instance, Jules Menken outlines the problems of Middle Eastern strategy and summarizes the military forces of the nations of that area, and Doctor Anthony E. Sokol of Stanford University expresses his views on seapower and the Soviet Union.

The collection of thought-provoking articles by topnotch military writers, the broad coverage of the contents, and the excellent presentation throughout make this volume a *must* for the military reader.

THE MEN WHO MADE THE NATION: The Architects of the Young Republic (1782-1802). By John Dos Passos. 469 Pages. Doubleday & Co., Inc., Garden City, New York. $5.95.

BY MAJ HARRY H. JACKSON, *Inf*

This is an excellent narrative of the early years of the American Republic in terms of people and great issues. The cleavages in political and economic philosophy that were instrumental in the development of the political party system in the form of Federalists and Republicans (Democrats) are depicted by the author. The Federalist, Alexander Hamilton, supported the concepts of a strong centralist government dominated by the elements of class and property. In contrast, Thomas Jefferson is shown as believing in the "common man" democracy with a large basis of participation, and a balance between federal centralism and a confederacy dominated by particularist states.

In the realm of the military Dos Passos discusses some of the challenging problems facing the Continental Army. Military payments in worthless "continental dollars," the rascality of provisioners contracting to feed the soldiery, and the continued failure of the Continental Congress to support the Army complicated the efforts of Washington.

An almost forgotten facet of America's military legacy, the Society of the Cincinnati, is highlighted. This effort to develop a class conscious, semimilitary hereditary caste into an organized group began in 1783. The society was formed by officers of the Continental Line and was promoted by Baron von Steuben and General Henry Knox. Washington became its first president, although he indicated his opposition to forming a military aristocracy.

Throughout his work the author's partisanship for "Jeffersonian democracy" can be identified. Accepting this bias, however, does not detract from his excellent historical presentation.

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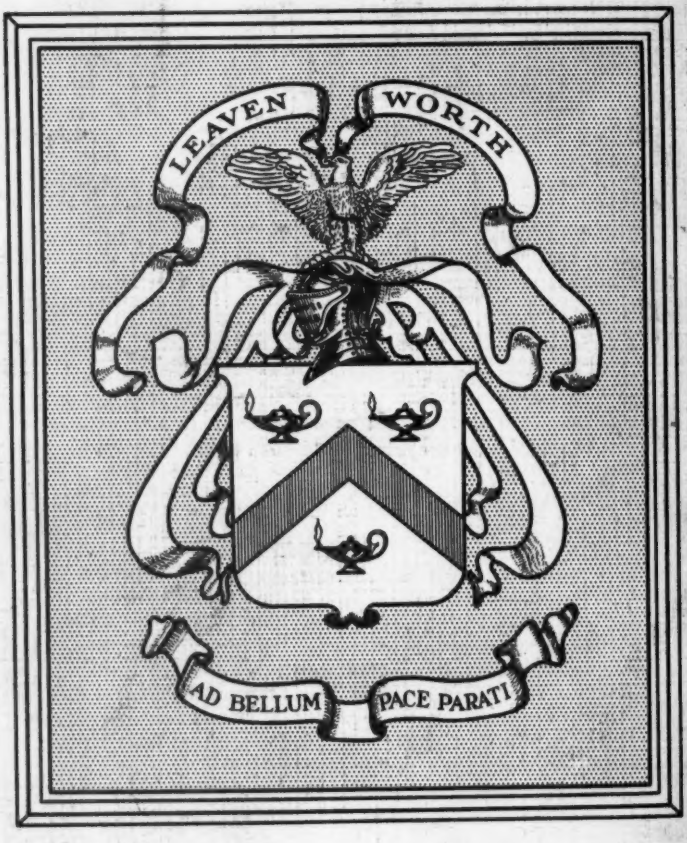
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